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FEBRUARY-MARCH 1956

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The Radio Ban — Peter Murray
The Fluoridation Experiment — M. Klerer
Liberal Lobby or Popular Protest? — W. Hall and Paul Ecker

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Chambers McAdory

THE 1952 STEEL STRIKE

A Case Study in Industrial "Statesmanship"

> Item from the *N.Y. Times*, 27th May, 1952. *Hiland G. Batcheller, chairman of Allegheny Ludlum Steel Corporation, Pittsburgh, warned today that continued decay of the moral climate in America would lead to the decline of the country's material prosperity.*
>
> *"One may not believe* [said Mr. Batcheller] *that widespread immorality will send people down the road to hades, but it will certainly send them down the road to poverty."*
>
> *The speaker made only passing reference to the current labor-management dispute.*

IT was three years ago, on 25th July, 1952, that the last great strike in steel came to an end. It spanned fifty-three days, and cost the economy 20,000,000 tons of steel — enough (for those who prefer their data graphic) to make 17 million tractors, 150 million refrigerators, 7,250,000 automobiles, or 3 million modern six-room houses. It could have taken care of the projected school building program of the nation for sixteen years. Yet, except for a certain interest by jurists in the constitutional curiosities of the strike, it is by now well-nigh forgotten. It deserves greater attention. The case is resurrected here, not as an academic exercise, but because it provides some of the most instructive lessons of recent years.

In its main outlines the strike appeared to be typical of almost every industrial dispute of the postwar period. The union presented demands which the companies promptly rejected as unreasonable and inconsistent with the public interest, and after four score press releases and a period of "unsuccessful" Federal intervention, the strike became "inevitable" and was duly proclaimed and carried out. There were, of course, some differences. Perhaps the exchanges *were* sharper, and the charges of bad faith, conspiracy, blackmail, greed, political partisanship, etc., more numerous. Perhaps, too, now that it is brought to mind, the Murray-Fairless embrace at the end did, in its degree of intimacy, overstep the bounds of decorum. Nevertheless, these constitute mere deviations of detail and magnitude, with a few novel factors thrown in as spice for a jaded palate. If the wit in the street had been asked his reaction to the production before him, he might at first have replied with the forthrightness of the freeborn: "Nauseated." But if pressed, he would probably admit that his bilious syndrome was little or no more active than had been periodically customary for years running.

The reader will no doubt gather from this somewhat tendentious presentation that the conventional picture of the steel strike of 1952 is not to be accepted. It isn't — and hasn't been for a minute. Long experience has taught that smoke can come from smudge spots as well as fires, and that sound and fury often signify, not honest strife, but collusion.

Hence the following charges:

That the strike, so carefully presented by its protagonists as a weapon of last resort to break the deadlock over wages, prices, and union security, was in fact an objective in itself, the "issues" being pretexts;

That the real aim of the strike was to eliminate unstabilizing surpluses that had accumulated in the steel and mass durable goods industries;

That this objective was achieved through concerted action by the industry, the union, and the President of the United States.

The burden of proof for a charge quite properly belongs to him who brings it.

The Background

The key to the steel strike — the threat of surplus — is not a new problem; from the outset it has been endemic, and even dangerous, to bourgeois society. But the closer that order approaches its modern form, the greater grows the danger. Instability, once a necessary mechanism for the developmental progress of the capitalist system, is a "luxury" that can no longer be afforded. The disproportions and dislocations are today too sharp, and experience has revealed the ease with which large dissatisfied masses can be set into motion. This explains two of the most characteristic (and complementary) drives of the times: on the one hand, totalitarianism; on the other, a one-sided emphasis on heavy industry. The expansion of this sector appears to be the only acceptable way of reconciling the political goal of full employment with the acquisitive appetite of the functionaries of capital. Heavy industry is the bread of the bourgeoisie; it nourishes them alone.

The State must enforce accelerated investment even when the question of demand for the increased output must be decided on an *ad hoc* basis. The uncertainties involved in this policy have never made it appealing to heavy industry itself, and to overcome its reluctance to expand, the Democratic Administration has resorted at various times to both threats and (more successfully) bribery. "The steel industry," writes Robert Keller,[1] "is a classic case in point. To put this branch of the economy on a war footing, the Federal government was obliged [during 1941-45] to supply as much as 50 per cent of its wartime capital expansion, or over 20 per cent of its total capital assets." With the end of the war and the elimination of both subsidies for capitalization and a guaranteed market, the steel companies refused to expand any further; indeed, they even scrapped some 4,000,000 tons of capacity as obsolescent, despite the choked up demand for durables, plant and equipment that had accumulated from the war years. In vain did the Administration threaten the industry with Government competition; being bluff, such tactics had only limited success. The authorities knew what was needed: a rationale for obtaining funds and a free hand to dispense them. Both were provided in 1950, by the "fortuitous" events in Korea.

The share of the steel industry in the Korean expansion bonus was enormous. Of the total "certificates of necessity" for accelerated tax amortization approved for all industries as of April, 1952, the steel companies received 24 per cent or $4,400,000,000. The demand side of the problem was similarly resolved, with the obvious things that the mind conjures up — row on row of steel tanks, trucks, mortars, ammunition and bomb casings, etc. — being only the first bold beginnings.[2] The great bulk of the defense-supported demand for steel was derived from plant and equipment expansion.[3] Tonnage allocations tell the story. By November, 1951, direct defense and defense related needs (in a 2:7 ratio) were taking more than 40 per cent of total steel output, and the proportion was apparently even higher in the new year. For example, direct shipments to makers of guns, ammunition, tanks and similar products in January, 1952, were stated to be higher than any such monthly total since the North Koreans crossed the partition line, and approximately three times higher than such shipments in the corresponding month of 1951.

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[1] *Contemporary Issues,* No. 18, p. 98.

It is the scandal of the American economic system that even this enormous waste did not suffice to ensure stability. Scarcely six months after the Korean intervention with its attendant panic buying, a "lull" of such extent developed in virtually all branches of the non-durable goods section that the *Journal of Commerce* diagnosed it in retrospect as a "rather severe recession". Setbacks here were soon followed by declining output indices in consumer durables. Figures released by the National Electrical Manufacturers' Association indicated that 1951 factory sales of refrigerators were 35 per cent less than in 1950, while declines of 21, 17, and 13 per cent were registered in sales of electric ranges, water heaters, and farm and home freezers, respectively.[4] The effect on earnings was marked. Although (according to the Department of Commerce) 1951 profits as a whole had suffered a diminution of "only" one-fifth, figures compiled by the *N.Y. Times* suggest appalling developments in many individual steel-consuming sectors. For example, returns on autos and trucks were 40 per cent lower than in 1950, on stoves and ranges 43, home appliances and machines 39, radio, television, and records 35, and auto parts and equipment 21.

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[2] It is an adequate testimonial to the bloated capacity of the American steel industry that the direct wastefulness in "prosecuting" the Korean enterprise must be accounted as only a drop in the bucket. Still, one must give the Pentagon politicians and supply men a good conduct medal or two for effort. The American army in Korea, forced through political restraints from home and by reason of careful rationing to fight a war of position rather than movement, had for that very reason to expend an enormous amount of shot and shell to maintain its lines intact. A comparison with World War II data reveals that this "little police action" has been, relatively speaking, the most costly war in history.

Overall rate of fire, as of September '52: three-four times greater than in WW II;

Artillery expenditure, as of January '52: rate six times over that for the last war, on a gun for gun basis;

Bomb tonnage dropped by Navy, as of November '52: nearly as much as in all of the last war;

Bomb tonnage dropped and aircraft ammunition expended by Air Force, as of June '52: 25 and 100 per cent more, respectively, than in first two years of WW II.

[3] Machinery and equipment items, for instance, accounted for 65 per cent (by value) of all the certificates of necessity granted prior to the steel strike.

[4] Comparisons between December 1950 figures, when operations were near capacity levels, and those for the corresponding month of 1951 are even more revealing: unit sales of refrigerators dropped 46 per cent, ranges 41, water heaters 50, and freezers 35.

The new year provided few tonic developments for relieving vascular tension. As early as December 1951, the National Association of Purchasing Agents had observed a reversal of the 15-month trend toward forward buying; many companies, for the first time since the blessed days of July, 1950, were found to be operating on a "hand to mouth" basis. At the end of January the Association declared that 35 per cent of its membership had further reductions in order backlogs and 24 per cent showed declining production. In view of these and subsequent warnings, first quarter profit reports could only confirm with precision what was already obvious in the round: corporate earnings (according to the Council of Economic Advisers) had suffered a 20 per cent cut from the same period of 1951. Again, revelations in individual sectors were more distressing. An earlier prediction by the Department of Commerce, that the automobile industry would soon be faced with a replacement market only, was amply substantiated by output statistics for the first half of the year, when 2,199,100 cars were produced, as against 3,109,100 for the corresponding period of 1951. Other durables were in equally desperate straits. Declines in January and February factory sales of the five major mass-market appliances (in comparison with 1951) ranged from 30 to 43 per cent, while for the first quarter as a whole, refrigerator sales slumped 44 per cent. At the same time, the giant General Electric Company set off a chain reaction when it reduced suggested list prices of television sets by $20 to $90, a move described by one member of the industry as an "action of desperation" to get rid of topheavy inventories. In addition, large scale bootlegging of goods (declared by trade officials to be the "worst ever") was found to be a serious hindrance in maintaining what price integrity still existed.

With the decline so general, not even the favored capital goods industries could escape dislocations. In April the press for the first time observed an abrupt drop in applications for certificates of necessity, an indication that the plant expansion phase of the defense program had reached its outer limits and that a downturn in plant and equipment spending appeared "inevitable" for the last half of the year. The *Times* spoke circumspectly of an "attitude of caution" prevailing, while the *Journal of Commerce* dipped into its jargon bag and for a caption came up with the ancient relic: "Capital Goods Producers Gird for Competitive Fight". They both meant the same thing: The bloom, boys, is off the rose.

Appeals to Washington were unnecessary. Pennsylvania Avenue may not, as alleged, read intelligence reports, but it charts every manic-depressive giggle of the Gross National Product with a passion for clinical detail. How was the decline to be arrested and confidence restored? One thing must have been distressingly obvious: the exploitation of the Korean situation had already reached its natural political limits, and to prevent deterioration from compounding itself, the only solution open was to limit output. Here Governmental intervention was necessary, not only for the relatively uncentralized lines lacking a basis for routine collusion, but even for the monopolistic branches which could use a respectable cloak for restrictions that would otherwise appear reprehensible in the eyes of the public.

The Government had its restrictive machinery ready. In the winter of early 1951, when the sharp price spiral induced by the events in Korea was, for all practical purposes, over, the authorities showed their solicitude for the consumer by initiating price controls. These were followed several months later by programs for "equitable" domestic and international allocation of raw materials, reinforced in certain cases by domestic production quotas. The Government, with an aptitude for semantic outrages worthy of a Stalin, now proceeded to utilize this machinery to deny materials to industries with over-abundant inventories of finished goods and to "firm up" prices. If this policy did not entirely succeed, it was due to the complexity and magnitude of the forces with which they had to contend, not to the lack of ingenuity.

One of the cheapest ways to accomplish the desired end was to prevent materials from ever reaching the American market. This honest chore was performed by the International Materials Conference, an organization of twenty-eight nations set up on the initiative of the American executive (with no Congressional review) for joint allocation of world stocks of copper, zinc, nickel, cobalt, tungsten, molybdenum, and sulphur, among other commodities. So generous were the American members of the IMC in consenting to the distribution of metals elsewhere that it prompted widespread protests from home. The Republicans, anxious to ingratiate themselves with unemployed constituents and place responsibility on the weak-willed do-gooders in the Government who had been taken by the foreigner, were galvanizd into action. In March, 1952, an eight-member Congressional group was appointed to study the problem. In its report it charged that the U.S., instead of receiving the 55.6 per cent of the free world supply of copper to which it was entitled, was being allocated only 49.1 per cent, a loss of 214,000 tons a year. As a result, makers of radio and television sets were receiving only 12.5 per cent of their pre-Korean consumption, while allotments for other appliances had been reduced to as low as 30 per cent of normal. Further revelations were made by the *Journal of Commerce* on 6th June:

> "What makes things tough for American manufacturers is the use of NPA and OPS controls to implement IMC allocations. In no case is 100 per cent of the free world's supply of a commodity allocated through IMC. There are always other sources available abroad. But the U.S. buyer cannot get to them at the going prices because OPS has established ceilings at levels which in many cases are simply unrealistic.
>
> "He is the victim in many cases of the cumulative effects of a system which, on the one hand, cuts down on the supply available to him through the new channels and, on the other, literally forbids him to use the old market channels still available abroad."

If "superfluous" materials were missed by these tactics, they were consigned to the "strategic" stockpile[5] or went to satisfy any procurement fancy of the Pentagon. "The military," wrote Drew Pearson on 2nd February, 1952, "are over-ordering with almost no regard for American economy. For instance, they have called for more nickel than the world's entire supply." A few days earlier the Executive Committee of the AFL had been sufficiently alarmed by mounting unemployment to charge that

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[5] And not just the strategic stockpile. *N.Y. Journal of Commerce,* 15th July, 1952:

"The Defense Materials Procurement Agency has inaugurated a program of stockpiling for civilian purposes — on top of the military stockpiling program — whose obvious purpose is the stimulation of 'artificial' demand for the purpose of keeping prices stable. Thus far only lead is affected by the new program but, once this precedent is established, and the system 'works', other materials are sure to follow."

> "there have been disturbing indications of a tendency in programming and procurement by the military services to reach for the moon. . . . Suspicions are inevitably aroused when it is known that for many items allotments to the military are at about the same level as at the peak of World War II.
>
> "The request of the military for enough materials to construct permanent housing equal to more than one-fourth of the total national housing goal for 1952 also seems far out of line." [6]

In such a situation, very little could remain for personal consumption. It is with a sense of amazement that one reads of allocations for consumer durables in the fourth quarter of 1951: copper, only 54 per cent of the pre-Korean level; aluminium, 46 per cent; and steel, 58 per cent. And this was but the beginning. On 24th February, 1952, Thomas F. Conroy reported in the *Times*:

> "There were few signs of new inflationary pressures last week so far as major indices were concerned. On the contrary, both commodity and stock prices moved lower than had been expected in relation to current demand, and profit margins in industrial fields are tending to narrow. . . .
>
> "Official quarters continue to warn of inflation but have not explained existing anomalies. Roger L. Putnam, head of the Economic Stabilization Agency, declared last week that soft prices in some fields, notably consumer goods, 'have blinded a lot of wishful thinkers [!] into believing that the danger of inflation, which was so obvious a year ago, has somehow disappeared'."

At the same time, Henry H. Fowler, chief of the National Production Authority, announced that "use of copper and aluminium for manufacturing consumer goods will be cut to 30 per cent of pre-Korean levels in the second quarter of this year. The quota for the current quarter is 35 per cent, so that the reduction from present quantities of these metals is 14 per cent. However, more sheet steel will be available . . . if it can be used without requiring more copper or aluminium."[7]

These, of course, are averages, and tell little of the desperate plight of many producers. On 16th January, 1952, the *Times* reported the testimony of Mr. Telford Taylor, head of the Small Plants Administration, before the House Select Committee on Small Business. "Nearly 3,000 small businesses," said Taylor, "have had their allocation of copper and aluminium cut to less than 20 per cent of their normal requirements. Confronted with these hard facts, the prospects for many small business enterprises are hazardous. . . ." The hazards would appear to be a deliberate creation. At the very height of the enforced cutbacks, Drew Pearson (on 16th March) quoted one aluminium company executive as saying "we have aluminium running out of our ears". Confronted with a public demand for an explanation of such contradictions, Government officials reacted with impudent innocence. Early in March the head of DPA, Mr. Manley Fleischmann, ordered a survey of the metal situation, which would (AP) "clarify the picture, not only for the public but for officials who, in many cases, are as puzzled by the slackening demands as anyone else". But survey or no survey, aides described him "as definitely against any dismantling of the control materials plan". Moreover, before loosening up consumer goods markedly, the Defense Production Administration would undertake to raise the allotments for ". . . defense-supporting activities" and "the national defense stockpile".

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[6] We juxtapose against this the following item from *U.S. News and World Report* of 8th February: "Home building, to be cut this year to not more than 800,000 homes from last year's 1.1 million, may not be far above the rate at which new families are formed. . . . The Government, by preventing overbuilding at this time, is postponing any building slump due to saturation of the market."

[7] Total steel allocations for consumer goods during the second quarter amounted to approximately 50 per cent of the pre-Korean base period (first six months of 1950).

Surveys in the press indicated that the majority of businessmen really believed raw material cutbacks were a detrimental rather than a stabilizing factor. Prominent tradesmen, however, seemed to be under no illusions. Baltimore's A. F. Waltzinger, for example, in a speech before the annual convention of the Venetian Blind Association, told the assembled manufacturers "to cease lamenting Government materials restrictions. The big trick lies not in maintaining production but in selling the reluctant consumer".

Other industry leaders, notably those in auto, were less honest. Despite the fact that, for the last half of 1951, the output of cars was 71,170 *below* the quota set by NPA, hardly a day passed without company-union denunciations of that agency, reinforced by noisy delegations to Washington at appropriate intervals. Yet when increased allocations were offered by the Government, they were turned down. For example, in February, 1952, the industry refused to accept a 10 per cent increase in steel, citing as a reason to curious reporters the lack of a commensurate grant of copper and aluminium. However, when in May the Office of Defense Mobilization decided to ease price restrictions on imported copper, the auto industry and its suppliers, according to the *Journal of Commerce,* reacted with "cool indifference". The *Journal* could not fail to observe that this marked a "complete reversal" of the earlier position. It made inquiries and reported, straight from the horse's vent, that "any increase in the supply of copper would be meaningless without an equivalent increase in other materials [for example, steel? — C.M.]". Since this refrain is familiar, it is possible to pass without further comment to the next if/but/and offered, i.e., "NPA's quota system, whereby each manufacturer is told how many units his company can build". Under this arrangement, said the industry, if extra materials were procured, they would be "useless".

Now, as a proposition in logic with given premises, the above statement has something lacking. Why should the quota system be out of line with the availability of materials? Unless . . . unless . . . but the "unless" is obvious, and we simply cite the 14th July issue of the *Journal* by way of confirmation: "Prior to the [steel] strike, the National Production Authority gave automobile manufacturers an unofficial wink to build cars in excess of NPA quotas." This was done by permitting the motor makers to borrow production against future quarters. ". . . Thus the quota system as it applies to the auto industry becomes meaningless," and interested parties "are banking on a lot of 'borrowing' by the car plants when steel output is resumed. . . ."

Government flexibility appears to crop up at peculiar junctures. When steel is plentiful (as shall be shown), quotas are rigid; when, due to the steel strike, metal stocks drop, quotas are "meaningless". It is interesting to note that, by shutting down during the strike, Detroit was able to reduce inventories by a significant amount. Could it be that the determining factor in applying quotas was not the availability of raw materials but the degree to which the market was saturated with finished products? "There is more than a suspicion," Loftus of the *Times* wrote on 2nd March, ". . . that with all the metals in the world Detroit would have a declining rate of automobile output. . . ."

The effect of this unstable situation on the steel industry can be easily surmised. Unlike the other basic metal producers, it had no stockpile privileges, and the decline in consumer durables, carried further by restrictions on materials, so alarmed industry leaders that at the end of October, 1951, they put the union and Government on warning. In testimony before a Senate Small Business Subcommittee, Mr. John E. Timberlake, general sales manager of the Jones and Laughlin Steel Corp., observed that steel demand was declining and that some excess inventories had been accumulated. The statement was seconded by E. C. Grace, chairman of Bethlehem Steel. At his quarterly press conference, he declared (in the words of the *Times*, 28th October) that "there had been a decline, week by week since last April, in inquiries for structural steel, that demand for conversion steel is falling off, and that soon there will be over-capacity for the production of cold-rolled sheets. . . ." He concluded: "I can't see anything but over-production — and soon — in steel." How soon was pinpointed during the first week of November by a newsletter circulated privately to businessmen. It predicted a gradual drop in output until spring and a possible "sharp curtailment" by August. Such a contraction, added the newsletter, might erroneously be attributed to strikes, just as the current decline in consumer durables had been ascribed to materials shortages; in fact, it would be due primarily to the continued low output of autos and trucks and far fewer starts in building and construction.

The prediction was amply substantiated by the gradual but inexorable decline which soon set in, to be interrupted only by the strike. When it began, the *Times* stated later (25th July), "mill operating rates were bordering on the edge of a sudden slump".

There was a direct connection between the imminent slump and the strike, and it is to this connection that attention must now turn.

The Rationale

On 17th July, when the strike was more than six weeks old, Alfred Friendly of the *Washington Post* reported the following "allegation" of an unidentified union spokesman:

> "The real explanation [for the continuation of the strike] . . . is that the industry fears over-production, resulting from its expanded capacity. It wants to reduce inventories and supplies on hand . . . so . . . that a condition of scarcity will continue for a year or two.
>
> "Then the industry will have a seller's market, and will be able to operate continuously at high capacity (the most profitable and efficient manner) for a long period, assured that the market will absorb all the steel produced and at the new price, more than $5 [a ton] above present levels.
>
> "The union quotes Charles M. White, president of Republic Steel, as having declared during one session of union-management negotiations, that the industry

needed a sixty-day strike to assure its financial stability for the next couple of years."[8]

Although Friendly's second-hand analysis was hardly rooted in hornbook economics, it was not novel in itself; the substance of the charge had been reported earlier by Joseph A. Loftus of the *Times* and the columnist Drew Pearson. What *was* unique was the accusation coupled with its source. It was the first and last time the question was ever brought up by any union spokesman, identified or unidentified.

If the union believed in the truth of its charge, why did it remain silent? Mr. Murray made many noisy speeches and initiated many irrelevant actions, quite in the style of Goethe's "manager", who had long ago formulated the first rule of diversionary showmanship: "In chief, of incident enough prepare; by mass alone can you subdue the masses." Several times, for example, Murray insisted that the strike was a consequence of company blackmail for a price increase, although he must have known that the Government had already unofficially promised such an increase before the strike began. On another occasion, which of course made headlines, he formally requested the National Labor Relations Board to issue an injunction prohibiting the Big Six of the industry from "conspiring" to block collective bargaining and preventing smaller companies from signing contracts with the union; this was followed up a week later by a plea to the Attorney General for anti-trust action. Such themes with demagogic elaborations were Murray's only stock-in-trade. In a speech to Gary Steelworkers three weeks after the strike began, he maintained that a negotiated settlement was being deliberately held up by "thick-witted, pot-bellied bankers" from Wall Street, who were in real control of the industry and were out to destroy the union. For sheer nerve, however, one really needs to mull over the union charge of 3rd July (*Times*), "that the conclusion of an agreement is being purposely delayed by the steel companies until after the Republican Convention in Chicago. The companies are . . . convinced that the convention would name Senator Robert A. Taft . . . as its Presidential standard-bearer and are waiting to be sure of his nomination before proceeding to a settlement". Mr. Murray had only one reason for flogging such dreary old duns: to cover up the common culpability of union and management.

Without Murray's active collaboration, it would have been impossible for the companies to have carried out the vast dissimulation evidenced before and during the strike. We do not suggest that Murray wore company livery; he marched with the occasion for his own good reasons. These reasons, together with their historical precedents, were the subject of an interesting editorial in the *N.Y. Journal of Commerce* for 31st July.

> "Union leaders are rewriting the economic textbooks. Formerly, when production caught up with the demand, and goods accumulated, the textbooks said that unions soft-pedalled their wage demands.
>
> "For big inventories meant lower production and lower prices. And a drop in employment and payrolls usually weakened the bargaining position of the union leader so seriously that he made no new demands. In fact, his chief concern was how to avoid a pay cut.

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[8] It is significant that, according to Friendly, the steel industry did not deny that White had made such a statement. It merely "insists the statement was not thought through, and does not reflect either White's or the industry's real position".

> "But all that is different today. John L. Lewis and Phil Murray have torn up the old standard books and have written a new one entitled 'How to Keep Goods Scarce So that Prices and Wages Stay High'.
>
> "Mr. Lewis took out the copyright on this theory a couple of years ago, when he called a series of strikes and 'holidays' on various pretexts over a period of nearly a year, until he finally had whittled a seventy day coal inventory down to nothing.
>
> "Then he exacted a heavy price for renewed production — a pay increase, stepped-up payments into the miners' welfare fund, etc.
>
> *"Mr. Murray, always an apt pupil of the old master, has learned from Mr. Lewis how to pull off a strike that tightens everything up like the wire between a couple of telephone poles. In fact, he has done such a smooth job this time, that it doesn't appear likely that there can be enough steel to meet the demand until next July."* [9]

Had Murray not called a strike, the *Journal* predicted earlier (10th July), "it is quite certain that many members of the steel union would have felt extended lay-offs because of a decline in steel demand and output next fall". The potentially explosive effects of such a situation on union stability are, to the nervous labor statesman, incalculable. Right before his eyes Murray had the example of the textile industry, where a combination of unemployment-induced unrest and bureaucratic ambition had split the union into warring blocs. And factional squabbles might be only the prelude. Could Murray have forgotten the ebullient days of the 'thirties, when the AFL hierarchy, faced with the mass revolts of Detroit and Akron against bedrock insecurity and flagrant betrayals, had lost every vestige of sphincter discipline? Murray, until then only one of John Lewis's lieutenants, created a career by digging in and riding this great movement; he has never since ignored its lessons.

But Murray's inventory strike had other values in itself. The modern labor bureaucracy which rises tier on impressive tier from the backs of its constituents has only one reason for existence: the natural antagonism between worker and management. Unless the labor leader can identify himself with this mood, at the same time channelizing it into harmless or "constructive" projects, he is lost; his precious empire, reeking even now of the charnel house, would soon be relegated to the potter's field of history. The more identical the interests of "labor" and management become in practice, the more must the appearance of mutual antagonism be maintained. As a consequence, periodic strikes, that end (after a "bitter struggle") with concessions just short of complete "victory", become a useful weapon for binding the worker to the bureaucracy and exhausting the animus accumulated from years of routine frustration.[10] The steel strike of 1952 was apparently no exception. "A good many competent observers outside the steel industry," Joseph Loftus recorded on 11th May, "feel that a strike would have cathartic and stabilizing values that would offset whatever damage it might cause. . . ." Cathartic and stabilizing values! Not the least of the indictments that can be brought against the institutionalized treachery of present-day unionism is this: it would take from the worker his only real possession — a deep-down grudge against a meaningless existence — and drape it like a yoke around his neck.

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[9] In this and all other cases, unless otherwise indicated, all italics are in the original.

[10] Perhaps the classic example of the "ritual" strike, as Drucker terms it, was the 1945 stoppage at General Motors, where for months the single "issue" of a penny's wage increase ostensibly prevented a settlement. Yet in fact Reuther was deliberately prolonging the strike to re-establish the contact with the workers that he had lost because of his enforcement of the no-strike pledge during the war. The strategy was quite successful. Before the strike, Reuther was in danger of losing his principality at GM; afterwards, he pushed himself into the presidency of the whole union, eliminated his rivals and their hangers-on, and centralized all power in his hands. Today the appanage period of the UAW survives only in the form of gadfly factionalism, fed by a disintegrating tradition of local autonomy.

This verdict will perhaps cause some pain to old-style militants whose theoretical development ended with the Great Depression. To be sure, even for the devout it is no longer fashionable to see in every labor official a potential reincarnation of the spirit of Gene Debs. It is even admitted that, in the ordinary conduct of union affairs, the workers have absolutely no say. The strike, however, is presumed to be something different. It is sacred, even if picayune in its announced aims and utterly irrational and anti-social in its results. It is the elemental expression of the working class, an index of revolutionary feeling, a galloping herald of Armageddon. Actually the workers contribute only one thing to the strike situation, and even this is largely *ersatz*: a mood receptive to official pretexts. All the rest — the formulation of the real aims *in camera* and the actual mechanics of the "struggle" — are lock and key property of the union bosses. Strikes cannot be judged in the abstract. Like wars, they are a continuation of politics, and the politics of unionism today are utterly rotten.

This has not always been the case. Indeed, one of the greatest surprises experienced in surveying labor history over the last twenty years is the dispatch with which the labor union has been transformed from an organ of the workers, however circumscribed in its aims, to a régime of sophisticated betrayal. Until the 'thirties, as Wright Mills has observed, the unions, considered nationally, were largely a set of "un-vested" organizations. In the midst of a labor movement that was cracking its provincial shell and striding forth into virgin fields, it was still possible to ask: Would the unions fight for the interests of society as a whole? Or would they make peace at a price and revive on a national scale the entrepreneurial ideal of business unionism? History gave its answer before the decade was out, and in a form that does not correspond exactly to either question. The unionism that issued from the 'thirties is not simply Gomperism writ large; it is business unionism in the Age of Monopoly and Ubiquitous Government, and takes its content, form, and cues from that context. If, as is sometimes stated, the highest aspiration of the old craft unionist was "more and more", the most profound objective of today's "international" could be adequately sloganized as "more — of less".

The real state of things stands out even in the union leader's rhetoric. *Life* Magazine, for instance, recently thrilled with a sense of history over a speech at the 1954 Steelworker Convention in Atlantic City by "thoughtful, handsome David McDonald", Murray's successor as chairman of the union. According to *Life*, McDonald began by marvelling at how, in the short space of eighteen years,

> "the solid phalanx of management hostility had changed to almost universal acceptance not only of the necessity but of the desirability of dealing with the union. . . .

> "Such a status requires responsibility and McDonald made clear he intends to provide it. Until now, he said, the trade union movement had had two main approaches ascribed to it: the Marxist or class-warfare approach, and the other simply a selfish I'll-get-mine pie-card approach. Neither is what is needed for the corporate democracy that exists in A.D. 1954. Marx is sixty-five years in his grave and the capitalism he sought to destroy was that of 1848, which is just as dead as he is. Equally out of date, McDonald went on, is 'the bread-and-butter selfish union which says, "We will get all we can and the devil take the hindmost. Forget the equities of the owners. Forget the equity of management. Grab what we can and if necessary put them out of business"'.
>
> "Then McDonald, speaking like a sober statesman, spelled out what the realities do require. 'We are engaged in the operation of an economy which is a sort of mutual trusteeship. . . . The U.S. Steel Corp. has almost as many stockholders as it has employees. These stockholders . . . employ a group of managers. . . . Certainly the managers must give full consideration to the just claims of the workers. Certainly the working force must see to it that the steel properties are operated successfully because if they are not . . . they will have no jobs. Both . . . have an obligation . . . to the stockholders [i.e., to make profits].'"

Life had no trouble identifying the real source of these lines: McDonald was only an instrument for the institutionalized views of Phil Murray. "The good which men do," intoned *Life*, "is not always interred with their bones. Phillip Murray is dead, but a benevolent revolution which he set in motion is now reaching fruition in a manner that is good news for every citizen because it is good for the country."

Murray's concern for the good of the country has deep roots; they go all the way back to his days on the Steel Workers Organizing Committee, during the "recession" of 1938. Just the year before he had won a contract from the very citadel of old Judge Gary without a fight; now he went out of his way to show U.S. Steel that its faith had not been misplaced. Although steel sales had plummeted sharply, the S.W.O.C. recommended that prices not be cut and followed this up by urging the Government to delay the T.N.E.C. hearings on monopoly in steel. But Murray's real talent was just beginning to blossom. In October, 1938, after pointing to the "terror-stricken condition of the steel industry brought about by a system of cut-throat competition", he went on to state: "If the steel corporations cannot put their house in order, it is the avowed purpose of the organized steel workers in this nation to promote a constructive legislative program that will adequately protect the interests of the industry and its workers." Those informed blinked in amazement. "That cut-throat competition had reduced the steel industry to terror," comments Wright Mills,[11] "was news to economists who had for decades been using the steel industry as the classic example of rigid monopoly pricing. It is clear that the labor leaders had lined up with the vested interests of the industry against the general business community, not to mention the public. . . ."

Murray has done nothing since 1938 that would justify any reconsideration of this judgement. In boom and bust he has made production economics the basis of his program. Of this the sham strike of 1952 affords but one more confirming instance.

Whoever disputes this verdict on principle has failed to learn the first thing about the modern social organism and the role of the labor leader as a functionary (all intentions aside) of capital.

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[11] *New Men of Power*, pp. 228-9.

The Buildup

The opening move was made by Murray at the Steelworker Convention in November, 1951. The current contract in the industry was due to expire on 31st December and he thought it a propitious time to raise a whole host of grievances (some twenty-two in number) for discussion. They included demands for a union shop clause to replace the old provision for maintenance of membership, a wage increase of approximately 18.5 cents an hour, and a series of fringe benefits which would cost at least as much or more. These demands, stripped of the bulk of the fringe benefits inserted for "bargaining purposes", were to become the pretexts for the strike.

Murray's proposals, considered out of context, were not precedent-shattering. The practicable core of the fringe benefits as well as wage increases of that magnitude had long ago been obtained by most of the strong national unions subsequent to the Chinese intervention in Korea. However, for a union whose dues-paying membership could expect soon to be decimated by unemployment, with all this connotes for the power situation, Murray's demands appear as exorbitant. The steel industry, which fell easily into a prearranged role, made this apparent in its counter-proposal — a simple extension of the old contract — which was, in effect, no proposal at all.

The companies had a ready explanation for their negativism: the fact that practically all items under discussion came within the purview of administrative law. America, as every schoolboy knows, is the Classic Land of Free Enterprise. The Government does not interfere; it merely lays a Helping Hand Over All. Under wage stabilization rules, contended the industry, the workers were entitled to a maximum increase of four cents an hour and even this figure could not be discussed until the price question, also a matter of official discretion, had been settled. "Whether our workers are to get a raise and how much it will be if they do," stated Mr. Fairless of U.S. Steel in a speech before the negotiations began, "is a matter which cannot be determined by collective bargaining, and will apparently have to be decided in Washington."

True statesmanship, however, demanded at least pro forma compliance with the canons of collective bargaining, so for several weeks the two parties "negotiated" and feigned brawls before the press. Then, on 17th December, Mr. Murray announced that his patience was at an end. From the outset, he declared, the industry had refused to bargain in good faith; instead, it had engaged in a "callous filibuster" against the legitimate grievances of American steelworkers. He called a strike for 31st December.

This was Truman's cue, and he took it. After being carefully briefed by his advisers, reports *Business Week* (29th December), the President of the United States made a Christmas eve phone call to Murray. In an atmosphere of camaraderie and God-Rest-You-Merry-Gentlemen, Truman stated that, in view of the grave international situation, the country would not stand for a strike now, and he might be forced to obtain an injunction under the Taft-Hartley Act. The situation might be different later; "Lord knows", he hoped so. Would "Phil" agree to refer the dispute to the Wage Stabilization Board? "Phil" professed some uneasiness. He realized the President could not commit the WSB beforehand (oh, no), but what would the President do if the public members had a hypothetical urge to become heroes? "If that should happen," the President of the United States is reputed to have said, "you come right to me, Phil. I'm telling you not to worry about getting a fair deal." In that case, said Murray,

> "if you assure me that the board won't tie us down with their ceilings, and rules — and that they will decide on the merits of what we ask — why then I'll recommend calling the strike off.
>
> *Truman:* That's exactly what I'm saying. You have my assurances. Yes.
>
> *Murray:* All right. We won't shut her down."

Business Week, to be sure, is probably not the best authority for a secret pourparler of the President of the United States. Its account of the conversation may have been, as alleged, an "approximate reconstruction", or it may have been made up out of whole cloth. The fact remains that, a few days later, Murray postponed his strike and agreed to non-binding adjudication of the issues by the WSB. What happened subsequently in no way contradicts *Business Week*'s charge of a corrupt bargain.

The Wage Stabilization Board had been originally created by an executive order of September, 1950, and charged with responsibility for formulating wage *policy* only during the Korean "emergency". From this modest beginning, like Topsy and with less reason, the board "just grew". Reconstituted seven months later with an enlarged membership and still unblessed by statute, it was given substantial power of actual intercession in wage disputes. With the emergence of the steel impasse, its competence was further increased. As the *Times* put it (5th January, 1952), the WSB was saddled "with the task of dealing with twenty-two issues, some of which, like the union shop, pertain neither to wages nor to stabilization". The Board was composed of six members each from labor, management, and the "public". In view of the later charge of pro-labor bias, it is interesting to note that several of the public members, whose vote was decisive, had one background detail in common: on many occasions they had acted as professional arbitrators, a job requiring the good will of both labor and management; they were not likely to jeopardize their standing with either. "Moreover," as Arthur Krock observed later (*Times,* 27th March), "no objection to these public members was voiced by labor and by that part of industry management which conducts relations with the unions. This at least certifies them either as fair at the outset or as near to fair as labor and management thought was obtainable from the appointive power." Despite all appearances, the public members were precisely that: eminently fair. They had a role to play, and any charge of partisanship must be examined in the total setting.

On 10th January the board began its hearings. It would be tiresome to recount in any detail the statements made there. The industry, citing its concern for the consumer and the psychological health of steel employees,[12] demonstrated on behalf of the *status quo,* while Murray made pathetic attempts to simulate indignation.[13] The Board ended its hearings on 16th

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[12] On 8th February the *Times* reported that, according to the industry, "union proposals to limit management rights would foster inefficiency and induce such frustration that some workers might be driven to 'radicalism and communism'."

[13] At one point the long suffering man was forced to burst out: "This piece of paper that your industry has presented here is the most reprehensible [!], filthy [! !], lying [! ! !], deceiving [! ! ! !] presentation that has ever been presented to a Government agency in my lifetime, and I want it to be placed in that

February and, after a reasonable interval for judicious assessment of the evidence, handed down its decision on 20th March, with the six industry members in dissent. The recommendations, which broke completely with past rulings, called for an eighteen month contract dating from 1st January and incorporating outright the demand for a union shop, plus a wage-fringe increase worth about twenty-one cents an hour.[14] Part I of the President's strategy had been handsomely consummated. Murray had "public" approval for an increase larger than any ever obtained by the steelworkers through collective bargaining. But would the industry receive a compensatory price adjustment?

The plot appeared to be shaping up in a familiar manner. On numerous occasions since the last world war, while thousands of workers and businessmen had remained shackled by Government regulations and prohibitions, those industries with strong unions had been able to circumvent them, provided they could conjure up the proper atmosphere of crisis. In 1946 Murray himself had employed just this strategy; his strike threat, ostensibly directed against the industry, had been in reality aimed at "forcing" a "reluctant" Government to lift its *price* ceiling on steel, so that a wage increase could be amply covered by the differential. Were Murray's current efforts a mere repetition of the 1946 squeeze play? This interpretation, popular among certain elements of the press, ignored the dissimilarities between the two periods. In 1946 it was only necessary to exploit to the full an already existing boom; in 1952 the boom had to be created before it could be exploited. For this reason, price and wage controls were not simply impediments to be evaded, but useful instruments — for raising prices and wages.

In a regulated, monopolistic economy it is taken for granted that changes in the wage and price level are a matter, not of economic law, but of equity. All during the WSB hearings the companies had appealed to this principle, but the board had not conditioned any of its recommendations by stipulating a price increase. Indeed, it could not do so; prices were excluded from its competence. When Mr. Feinsinger was questioned on the matter by reporters after the recommendations had been handed down and he was still engaged in mediation,

> "The Wage Stabilization Board chairman stressed that he had no power or authority to discuss prices with the parties, and that by the same token, officials in Washington were doing nothing about the wage dispute. This brought up the question of what exactly were his powers.
>
> " 'I am empowered to do anything,' he said, 'which I consider necessary or desirable to help settle this dispute — not including prices.' " (*Times*, 6th April.)

To make the strike rationale plausible, wages and prices were treated by the Administration with the strictest dichotomy and the "right" men

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[14] The publicized figure was 26 cents, but since the introduction of benefits was staggered, the actual amount, averaged out over the life of the contract, was considerably smaller.

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category."

"It is beastly in every true [!], absolute [!!], honest [!!!] sense of the word, and the gentleman who presented it is either ignorant of the facts or he is calculatingly contriving to place the steel workers who sweat and bleed and die in these operations in the category of despots, and I resent it with all the power within me." (*Times*, 14th February.)

assigned to each problem. Messrs. Feinsinger *et al* might lack the character to say "no", but prices were the special province of Mr. Ellis Arnall, head of the Office of Price Stabilization, ex-Governor of Georgia, avowed liberal (translation: he wouldn't be caught dead in galluses) and Custodian of the People's Interests. When the companies maintained that the effects of the recommended wage increase (and the new round of increases which it would "inevitably" precipitate throughout the economy) would be to raise steel wage and material costs by $12 a ton, Arnall stated that this did not necessarily follow and was anyway beside the point: he had no intention of treating *his* Office's rules in a cavalier fashion. The companies were entitled to a price increase of around $2.50 a ton, provided for by the recently passed Capehart Amendment to the Defense Production Act and not connected with any wage increase; anything beyond that could not be made to jibe with the so-called industry earnings standard[15] set up (with no legislative warrantry) by his Office. Arnall was reputed to feel "so strongly about this . . . that he'll politely pick up his hat and go back to Georgia if he is ordered to grant an increase in steel prices". The President was quoted as equally determined. He said nothing about gathering up *his* marbles, but he did tell advisers "that he won't give the steel industry a penny of price increase".[16] Stern stuff and, of course, strictly adhered to until the bitter end.

The Curetes of left, right, center, and interstices between had long before assumed the correct posture for howling. Now the most frightful din was raised, which, despite the apparent cacophony, did have one common theme: an acceptance of the face-value content of the President's action. This was true even for the ideological hangers-on of business, who complained "bitterly" that Truman was a demagogue catering to popular prejudices at the expense of the steel industry. Would to God, if true, all our politicians were of this ilk! In actual fact, Truman had no intentions of doing anything at the expense of the steel industry. At the right time the latter would get its price increase. *His present aim was to make the strike "inevitable"; otherwise, a ten-fold price increase would have been meaningless.*

It is not difficult to demonstrate this. For months before the strike, the press was full of concern over the spreading softness in steel prices. European steel, rusting on the docks for lack of buyers, had already dropped $25-50 a ton, while plates were being offered at 7.5 cents a pound as against 11 cents in 1951. Premium prices and extra charges (for cutting and shaping,[17] warehouse fees, etc.) were rapidly disappearing. On 15th May, Sidney Fish reported in the *Journal of Commerce* that for weeks marginal warehouses and consumers had been selling distress stocks of finished steel at prices as much as 25 per cent below OPS ceilings. Other warehouses, in order to retain customers in distant regions, had been quietly absorbing freight charges for as long as six months. Price cutting had not yet spread to Big Steel or to the major warehouses, but this was only a matter of time. On 11th May Loftus of the *Times* declared that, when Truman seized the steel mills in April, inventories in the hands of consumers were so high that the "sales departments of some steel companies could not move new stuff out of the plants. . . . Businessmen usually do not raise their prices under these inventory conditions". And David Lawrence, a business partisan, wrote in his syndicated column on 27th June:

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[15] The standard stipulated a price increase only if a company's current earnings were more than 15 per cent below the average level of its best three of the four years 1946-49.

[16] Drew Pearson, 19th March.

[17] In some cases, the cost of conversion steel had been running $50-100 a ton more than the regular mill prices for sheets and plates.

> "The steel companies would like to have a total of $5.50 a ton but the economic factors surrounding the question of price have taken an interesting turn. There are some steel management men who would prefer not to get anything as high as $5.50 a ton for fear they will be pricing themselves out of a market — that is, if the steel strike is settled soon. If, however, it isn't settled in the next few days and stretches out for weeks, then the $5.50 a ton hike could be absorbed because steel would be in greater demand."

In refusing the request for a price increase, Mr. Truman must have known that the companies at that moment were hanging on for dear life, and barring a sharp cutback in production, it would have been impossible for them to maintain the current price level, much less a higher one. Had he been sincere in his professed solicitude for the public he would have said to the mill management: *Gentlemen, you have asked for a price rise of $12 a ton. We think this is bluff, and to prove it we will raise your ceiling, not just $12 (why be pikers?), but $50. There is, of course, this stipulation. The moment your rate of production falls .000001 per cent below capacity, the price increase is automatically cancelled. Furthermore, for each 1 per cent drop subsequently, your ceiling price will be lowered precisely $1 per ton. The initiative is yours. Swill if you will.* If the President had done this and had followed it up by similar candor with the other "issues", it can be safely assumed that there would have been no strike. He did not choose to do so. By granting a wage increase with one arm and refusing a price increase with the other, he was deliberately precipitating a strike and, at the same time, protecting himself from popular retaliation.

Mr. Truman's instincts with regard to the public were healthy, but there was some danger that he would over-protect himself and jeopardize the whole project. On 24th March the *Journal of Commerce* angrily editorialized:

> "The Washington gossip and labor columnists were right all along: the deal was made before the negotiations started and the Wage Stabilization Board had to be brought into the picture just to make it look good and to help build up the sense of crisis which was needed to palm off these recommendations . . . as 'well within the Board's regulations and policies, supported by Board actions in previous cases, and moderate as to amount'.
>
> "That means that the steel industry has been successfully manœuvred into a situation in which responsibility for a steel strike will be placed at its doorstep — by the union, the Administration and, probably, the public."

Neither the companies nor the Government could allow this situation to stand, since each party had to be able to justify its position to the public. If it was deemed necessary for Murray to have the protection of the President (to such low esteem has unionism fallen), the companies would have to redress the propagandistic imbalance by obtaining support in other high places. Their quest was highly successful. With the apparent blessing of Mr. Truman — no other interpretation adequately explains the reported facts — they secured the defection of the most powerful appointed official in the executive branch, Mr. Charles E. Wilson,[18] who, as Director of Defense Mobilization, had ultimate responsibility for the actions of both the Wage Board and OPS.

The events which led to Wilson's dramatic break with the Administration seem to be fairly well established. When the WSB handed down its decision on 20th March, Wilson slipped off to New York for an informal meeting with officials of the Iron and Steel Institute. There, according to Drew Pearson (7th April), he was "sold" on the idea of granting a price increase. Wilson then flew to Key West for a series of conferences with the President, returned to Washington and, *with the full knowledge and approval of Truman,* fired the following smudge pot at the feet of the press.

> "Washington, 24th March — Charles E. Wilson, Director of Defense Mobilization, repudiated tonight the Wage Stabilization Board's recommendations for settling the steel dispute. . . . Mr. Wilson told reporters:
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> "'. . . There is no question in my mind but that, if the wage increases contemplated under the W.S.B.'s recommendations are put into effect, it would be a serious threat in our year-old effort to stabilize the economy. Of that I am sure.'" (*Times.*)

Now Mr. Wilson was, of course, Mr. Feinsinger's superior, and to explain his somewhat belated repudiation, friends of Wilson planted rumours in the press to the effect that he had not been informed beforehand of the board's recommendations. This explanation, wildly improbable even if there were no evidence to the contrary,[19] prompted so many similar "revelations" re "bureaucratic blunders" that Drew Pearson (7th April) could seriously characterize the ensuing strike situation as a "tragedy of errors".

> "The whole steel wage discussion [thus Egan of the *Times* on 27th March] has developed one of the most serious rifts among defense-production agencies since Mr. Wilson took office. Divergent views about steel wages held by the Wage Stabilization Board and Mr. Wilson's office are matched by sharp differences between officials of Price Stabilization and Wage Board experts.
>
> "The Wage Board is charged by price officials with failure to consult them on the probable effect upon prices which the Wage Board's recommendations would have.
>
> "Officials in both the Wage Board and price agency in turn have accused their nominal boss, Roger L. Putnam, Economic Stabilization Director, of not taking an active enough part in the Wage Board's discussions and of failure to give the Office of Price Stabilization his moral support in their contention that no steel price rise was justified."

Thus Wilson's *coup de maître* created a great fissure in the Administration's solid front. The "confusion" expertly produced there was automatically reproduced in the community, and the companies now felt secure enough to adopt a pose of rigid defiance.

The process of fragmenting and neutralizing public opinion was completed by Truman. On 30th March he accepted Wilson's resignation, charging that the latter had misled him in characterizing the WSB proposals as unstabilizing. Full, open backing was given to *both* the Wage Board and OPS. The effect of this "flagrantly partisan" action was stated by the *Times* in an editorial of 26th July:

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[18] That is, "Electric Charlie" Wilson, on leave from General Electric; not to be confused with "Engine Charlie" Wilson of Detroit and "What is good for General Motors . . ." fame.

[19] WSB Chairman Feinsinger subsequently, in direct testimony before the Senate Labor-Management Committee, stated that both Mr. Wilson and Economic Stabilization Administrator Putnam were apprised of the recommendations before their release and made no objections. He was never openly contradicted by Wilson.

> "For President Truman to have plumped at once for the Board's recommendations, to whose acceptance neither the union nor the industry had bound themselves in advance, was an irretrievable error. This . . . insured a stalemate, since Mr. Murray could scarcely explain to his followers any concessions he might subsequently have been willing to make."

Truman's action was "irretrievable" but hardy an "error". The strike situation which he had deliberately set out to create was now an accomplished fact.

But the strike situation was not enough. It was now necessary to protect the strike.

On 8th April the furnaces were banked and the workers, as scheduled, left the mills. That same day the President of the United States, with the "utmost reluctance" but determined not to "endanger the safety of our fighting forces", authorized his Secretary of Commerce to seize the mills.

Seizure and the Courts

On the surface the President's action in seizing the mills appears to negate the main thesis. Actually it is a confirmation. A refusal to act would have invited the intervention of organized patriotism and alienated many consumers who, despite their unsure grasp of the "issues", nevertheless felt that the strike should be stopped. Perhaps more compelling, it would have prompted skeptical second thoughts about the whole atmosphere and apparatus of emergency. Was not the very existence of dozens of bureaux justified by the Communist peril and the necessity of maintaining uninterrupted production? Thus it was imperative to squelch from the outset all such reactions by giving the appearance of having exhausted all possibilities of forcing a settlement. This the President accomplished through seizure of the mills — *in a thoroughly illegal manner which he knew full well would be declared illegal by the courts.*

Nothing is easier to demonstrate.

(1) *Authorization for seizure.* For men out to win a case, Truman and his lawyers followed some strange procedures. Over and over again, the Justice Department denied that the President's action was grounded on any statute; instead he was relying solely on Sections 1, 2 and 3 of Article II of the Constitution, "and whatever inherent, residual power that may flow therefrom". The relevance of these sections (which simply state that "the executive power shall be vested in a President", who "shall be Commander in Chief of the Army and Navy"!) was adequately appraised by Judge Pine when he granted an injunction to the steel industry: "their mere enumeration shows the utter fallacy of defendant's claim". Judicial rejection was most certainly perceived beforehand by the Federal lawyers. Prior to seizure, A. H. Raskin wrote in the *Times* (6th April) that, when the question of heading off a strike was first raised back in December, the President's "top advisers told him they did not feel there was any 'sound legal basis' [to the inherent powers argument] for seizure of the mills. . . ."

The President rested his case solely on this point despite the fact that ample legislative authority already existed for legal seizure. On 26th March the *Journal of Commerce* reported an interesting interview with "high officials of the Department of Justice". It was their opinion that the President "has two clear-cut statutory powers" to stop a strike: the first was the Taft-Hartley Act which authorized an eighty-day injunction; the second was the "seizure power provided under the Selective Service Act. . . ."[20] The latter legislation states that if any commercial entity fails to carry out deliveries on "mandatory orders" for Government supplies, the President is authorized to "take immediate possession of any plant, mine or other facility . . . and to operate it through any Government agency for the production of such articles or materials as may be required by the Government". The relevant provisions of this bill were not cumbersome to effect. According to the *Journal*, the Federal attorneys "agree" that the speed with which Truman could act "is entirely a matter of Presidential discretion", involving no more than a day or two's delay.

Not a single editorialist, radio commentator or Congressman has ever seriously raised the question as to why the President did not implement this act.

(2) *Who seized the mills?* It is not generally appreciated that seizure was effected, not by Truman himself, but by his Secretary of Commerce, Sawyer, who had been previously authorized by executive order to take possession of the companies at his own discretion.[21]

The legal subtlety involved here proved to be quite important. According to Judge Holtzoff, to whom the companies first appealed for a restraining order, "It is very doubtful, to say the least, whether a Federal Court would have the authority to issue an injunction against the President of the United States". The companies, however, maintained that they were not moving against Truman, but against Sawyer, and that there was ample legal precedent for enjoining an executive officer who had exceeded his authority.

Judge Holtzoff: "Suppose the President personally was exercising the authority?
Company Attorney Wilson: "I would have considerable doubt."

Judge Holtzoff, however, did not fully appreciate the legal distinction. The companies then gathered up their shopping bags and went over to the court of Judge Pine, who did. In fact, when Mr. Baldridge once referred to himself during the hearing as Government counsel, Judge Pine corrected him and said, "You are counsel for Mr. Sawyer". Later, in drawing up his orders on behalf of the individual steel companies, Pine directed them against Charles Sawyer, defendant. They did not even identify him as Secretary of Commerce.

It is difficult to believe that this loophole could have been overlooked by the President's legal advisers.

(3) *Outrageous provocation.* On 10th June, after the Supreme Court

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[20] There was also a third: the seizure power provided under Section 201 (B) of the Defense Production Act.

[21] Sawyer's telegraphic announcement of seizure reads as follows: "The President of the United States . . . has directed me . . . to take possession of all properties of your company which *I deem necessary* in the interests of national defense.

"*I deem it necessary* in such interests to take possession. . . ." (Italics added — C.M.)

had handed down its decision, Marquis Childs observed in retrospect that "the presentation of the case for temporary seizure of the steel companies was miserably handled from start to finish". This is an understatement. At times the Federal lawyers seemed to display acute symptoms of vicarious paranoia. In his appearance before Judge Pine, Mr. Baldridge agreed that the President's seizure order was not rooted on any statute, only on the Constitution. This led ultimately to the following colloquy between court and counsel:

> *Judge Pine:* "Is it your concept of Government that the Constitution limits Congress and it limits the Judiciary but does not limit the Executive?"
>
> *Baldridge:* "That's our conception. . . . The President is accountable only to the country and his acts are conclusive."
>
> *Judge Pine:* "I have never heard that expressed in any authoritative case before."

The Federal lawyers no doubt intended this sort of exchange for strictly intra-legal consumption, but it was unfortunately heavily publicized and raised a great stir. Even ardent Government supporters were embarrassed, and hard put to explain such apparent irrationality. "Some lawyers sympathetic with the Government's position," reported Joseph Loftus on 28th April, "felt that Mr. Baldridge was led into making, or acquiescing in, unnecessarily broad statements." As for the *Times* itself, it reflected sadly on how "the trend away from government by advice and consent . . . has affected even so modest and democratic a man as President Truman". The *Times* did not "for a moment suppose that Mr. Truman intends to set himself up as a dictator . . . he apparently acted under some sort of subjective compulsion".

Eventually the President indirectly repudiated Baldridge's pretensions on his behalf — but not, of course, until Operation Pine was over and the companies had their injunction.

(4) *Godspeed to the High Court.* Judge Pine handed down his decision on 29th April, and the next day the Circuit Court of Appeals granted the Government's petition for a stay.[22]

At this point Truman still appeared to be in an invulnerable position. The matter was "in the courts", and anyone who has had any experience with this splendid institution will know what the expression implies. As Raskin of the Times put it on 6th April,

> "the consensus among Federal lawyers is that [while Presidential seizure is probably illegal] it would take so long for anyone to get a definitive ruling on his power that the steel crisis would have been passed successfully before any court said, Stop.
>
> "A hearing on the merits of the seizure would drag through every level of the Federal judiciary before either side could claim victory.
>
> "This would take a year by the most conservative estimate. Even the marathon dispute in steel ought to be resolved in that time."

It occasioned some surprise, therefore, when Acting Attorney General Perlman told reporters that the President was "quite anxious" to obtain a definitive ruling from the Supreme Court on Pine's decision. Acting upon this, the Federal and company lawyers prevailed upon the Circuit Court of

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[22] Since the Court's duty was only to consider whether reasonable doubt existed as to the correctness of Pine's decision, it is instructive to note that four of the routine grant of stay.

Appeals to ignore the normal judicial sequence and certify the case directly to the Supreme Court for a hearing. And the High Court, again with the common consent of Government and industry, agreed to adjudicate the case itself, rather than remand it to the lower courts. Thus, instead of endless litigation, the matter was over and done with only thirty-three days after the Circuit Court of Appeals had granted its stay. Even the *Times* (8th June) was mildly struck by the "speed with which the Justices ruled — normally such a case might be on the calendar for months. . . ."

At this point we must be stern with the reader. If he has entertained any suspicions regarding this anomalous procedure, he should, in good faith, immediately cast them aside as unworthy. A little reflection on Mr. Truman's well-known fascination with the Muse Clio affords a ready explanation. On countless occasions privileged visitors have been impressed with his vast knowledge of Presidential lore and precedent, and his habit, when conducting White House tours, of asking such profound questions as: Who would you believe installed the first flush toilet in this place? An uncommon man this. One who has a sense of his responsibilities to, and place in, history; who, in really momentous questions, would not, could not, for a moment, be guided by expediency but only by an appreciation of the continuity of Presidential power and the necessity to hand it down as received, still in the flush of undiminished, pristine vigour. As Arthur Krock explained the President's position in the *Times* (4th May), a refusal by the Supreme Court to review Judge Pine's decision would have

> "left hanging in the air the great Constitutional issue that was raised by the steel companies in the lower court. The record would only have shown that the lower court had imposed the most sweeping limitation of Presidential power under the Constitution that has ever been stated by a judge claiming such jurisdiction. . . .
>
> "Realization of this moved the President to instruct the acting Attorney General, Philip B. Perlman, to carry the issue to the highest court. He sincerely feels that if Judge Pine's decision is allowed to stand in full force for any reason — including developments that will make the legal issue 'moot' — his successors may be prevented from taking emergency actions on which the fate of the nation will depend . . . he believes this invokes a prospect so perilous that duty and necessity require the Supreme Court to affirm this limitation."

(5) *Mr. Truman's law-abiding nature.* In view of the Supreme Court's reputation for shrinking civility, the possibility that Mr. Truman might still extricate his case with intimidating tactics was much discussed in the press. It was at first a reasonable impression, strengthened considerably by the President's efforts to represent himself as a determined dispenser of rough American justice in the tradition of Abraham Lincoln and Roosevelt the Elder. (At one point, for instance, he stated that he had as much right to seize the press and radio as the mills.)

The reporters were very much interested and at his conference with them on 21st May the President let them fire away. The result was a masterpiece of ambiguous clarity. For the public he was stern, for the Court, complaisant. Arthur Krock, 23rd May:

> "The Presidential Clarifying Authority, a White House Agency that is often overworked, resisted all pleas today to reconcile several mystifying comments on the implied powers of the Executive that Mr. Truman made at his press conference. Apparently the time finally arrived, as many expected it would, when the requirements of the task exceeded the ingenuity of the Authority or the explanation would reveal what is still a secret plan. . . .

"Answering questions in his offhand way, the President made statements that met themselves coming back and then didn't speak as they passed by. He said . . . that he had been trying ever since he took office to get a law whereby the economy could be kept going when management and labor were unable to get together in industries that were vital to that economy and seizure seemed the only answer. . . .

"That presented no task for the Presidential Clarifying Authority. But a moment later Mr. Truman was asked if he wanted such a law to reserve for use in emergencies or thought the President should go to Congress for the means to deal with each emergency. Then it happened.

"Mr. Truman said the Executive has this power and they can't take it away from him. Did he mean the power of seizure? That was correct. And 'they' can't take it away? That was correct. Cingress? Yes. The courts — ? Nobody can take it away from the President because he is the Chief Executive of the nation and must be in a position to protect the public welfare. . . . Isn't that the issue before the Supreme Court? He didn't think it was. . . . Then what was the issue before the court? The attorneys had stated it.

"But (the exchange continued) suppose the Supreme Court, while not going into the broad constitutional question, said this particular seizure was illegal, what then? Wait and see. And don't worry about how the President will act. But did not the President say he would abide by any decision rendered by the court? That was correct and the President will. . . .

"Maybe [adds Krock at the end] the whole discussion can be blamed on the tides of spring that for weeks have seemed to be coursing through the President's veins. Though summer is not yet icumen in, lhude sing cuccu."

Lhude sing cuccu? Oh, Mr. Krock, Mr. Krock — *lhude sing Curete*!

(6) *The Supreme Court.* The Government brief submitted to the High Court was substantially the same as that for Judge Pine, and although Mr. Perlman's arguments lacked the crude provocation of his predecessor's, his evasiveness in the oral exchanges on statutory authorization was even more conspicuous.

Justice Black repeatedly asked whether Mr. Perlman was relying on any statute and seemed to be demanding a categorical answer. Mr. Perlman said, "we are depending on the power in the Constitution", and added that certain statutes were involved in the case. He referred to laws providing for the recovery of damages.

"That's remedy, not power," said Justice Douglas.

Mr. Justice Douglas felt it necessary to pursue the matter further. He said he was "confused" about the laws that the Government contended backed up Mr. Truman's seizure. He reminded Mr. Perlman that he had promised to cite specific examples.

"I'm relying," Mr. Perlman said, "on every single law——"

"That doesn't help me," Justice Douglas cut in sharply.

"Let me finish, your honor," Mr. Perlman said, adding "Every single law passed in recent years."

"Would you mind sometime giving me just one single law this seizure helped to enforce?" Justice Douglas demanded.

Mr. Perlman cited the Defense Production Act. He said this law gave Mr. Truman power to try to settle the steel dispute through the Wage Stabilization Board[23] and outside the Taft-Hartley Act.

The chase appeared to be at its most hopeless when Mr. Justice Reed, taking the bull by the horns, finally met with success.

Reed: "Do you depend on any statute that gives the President any power to do this specifically?"

Perlman: "Specifically, there is no specific authority."

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[23] This is untrue. There was no statute authorizing establishment of the WSB.

By this time the justices must have gotten at least a glimmer, but they were still uneasy. We sympathize. How can one act with lion-like courage when dealing with an (apparently?) genial opponent who has been known to bite? Justice Frankfurter asked

> "why the Government did not use the Defense Production Act's authority to requisition industrial facilities.
>
> Mr. Perlman said that procedure would take too long.
>
> "Would you mind telling me why?"
>
> Mr. Perlman said it would mean filing condemnation suits in every judicial district in the U.S. Justice Frankfurter said he did not think so.
>
> Mr. Perlman said, 'I think you've confused Section 201 (of the Defense Production Act) with Section 18 of the Selective Service Act. . . .' "

Joseph Loftus, who provided the above excerpts, does not indicate whether the Court pursued this interesting admission any further. Perhaps it did not need to, having already realized it was being given a mandate to act with an unaccustomed boldness. On 2nd June the majority opinion was distributed to the press. The whole document fairly throbs with resurrected manhood, but we offer here only one really pertinent portion:

> "The President's power to issue the order must stem either from an act of Congress or from the Constitution itself. There is no statute that expressly authorizes the President to take possession of property *as he did here*. Nor is there any act of Congress *to which our attention has been directed* from which such a power can fairly be implied.
>
> "Indeed, *we do not understand* the Government to rely on statutory authorization for this seizure. There are two statutes which do authorize the President to take both personal and real property under certain conditions.
>
> "However, the Government admits that these conditions were not met and that the President's order was not rooted in either of them. The Government refers to the seizure provisions of one of these statutes (Sect. 201 (B) of the Defense Production Act) as 'much too cumbersome, involved, and time-consuming for the crisis which was at hand'." (Italics added — C.M.)

Justice Clark, who contributed a separate, concurring opinion, noted:

> "the hard fact remains that . . . the Government made no effort to comply with the procedures established by the Selective Service Act of 1948, a statute which expressly authorizes seizures when producers fail to supply necessary defense material."

In a footnote, he added:

> "The Government has offered no explanation, in the record, the briefs, or the oral argument, as to why it could not have made both a literal and timely compliance with the provisions of that act. . . .
>
> "The act does not require that Government orders cover the entire capacity of a producer's plant before the President has power to seize.
>
> "Our experience during World War I demonstrates the speed with which the Government can invoke the remedy of seizing plants which fail to fill compulsory orders. The Federal Enamelling and Stamping Co., of McKees Rocks, Pa., was served with a compulsory order on 13th September, 1918, and seized on the same day."

The most interesting opinion, however, was contributed by the minority. *Despite all attempts by the Federal lawyers to keep statutory considerations out of the discussions, Vinson and his co-dissenters evaluated both the Selective Service and Defense Production Acts, along with the Constitutional citations, as basic grounds for legitimizing the Government's action!*

> "Indeed [writes Vinson], the Universal Military Training and Service Act authorizes the seizure of any plant that fails to fill a Government contract or the properties of any steel producer that fails to allocate steel as directed for defense production. And the Defense Production Act authorizes the President to requisition equipment and condemn real property needed without delay in the defense effort."

The "nation" rejoiced at the verdict and the Court's seemingly unequivocal grasp of the constitutional issue. Who now, trumpets one partisan, "will credit a picture of coy fragility and dependence after seeing the judges set President Truman's inept aides back on their heels . . . ?"[24] A more sober evaluation gives much less cause for jubilation. Would the decision of the Court have been the same had the President been sincere in his efforts and, moreover, not already armed by a complaisant Congress with adequate legal powers? Would the decision have been the same had the "crisis" been just a little bigger?

We cannot help but feel that the Court's decision saved, not the "American Way of Life", but only — Mr. Fairless's, Mr. Murray's, and Mr. Truman's strike.

The Strike

During the period from early November until 2nd June, when the crisis was building up to a crescendo, the possibility of a crippling strike was the principal topic of public discussion. The period after the Supreme Court decision was a different story. "Congress," noted the *Journal of Commerce*, on 18th June, "seems strangely content to let the situation slide a while. . . ." And the *Washington Post,* in a retrospective editorial of 28th July, thought it a "paradox that the same Administration which was so panicked at the thought of a strike that it resorted to illegal seizure of the mills was curiously silent during the strike itself".

The indifference of public authorities was not the only puzzling factor. With regard to the chief protagonists, it became progressively more difficult to explain how "issues" that were either trifling or already settled could, properly speaking, be considered issues at all. The *Journal of Commerce*, for example, reported (17th July) that the steel companies, *in May,* had offered a total wage package of approximately 22 cents an hour (16 cents wages, 6 cents fringes),[25] the precise basis for the final settlement. It is true that Murray was reputed to have refused the offer, yet the *Times*, one week after the onset of the strike, mentioned this same figure in connection with a "tentative understanding" which had been reached. On 22nd June, the *Times* spoke of the stated figure as "still certain". When the strike was over, *US News and World Report* (1st August) flatly declared the final wage agreement had been worked out and accepted on 9th June.

The price question was apparently resolved even earlier. In April, before the first walkout by the steelworkers, it was reported that the industry had been offered a price increase of $4.50 a ton. This figure, supplemented by a small amount to cover a subsequent increase in freight rates, was the exact basis for a final agreement months later after the strike had run its course. Again, it is true that the Government publicly repudiated the offer after seizure, but as the *Times* of 13th April pointed out, "The industry, like all experienced parties in collective bargaining, knows that an offer, once made, is almost impossible to withdraw in fact". When price officials continued to deny that any increase in excess of that permitted by administrative law was contemplated, the *Times* reiterated (22nd June): "Despite naïve statements from Washington on the possibility of a compensatory price rise, it has been known in the industry for some time, and . . . reported here, that steel prices would advance around $5.50 a ton."

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[24] Professor Cahn, N.Y. *Times Book Rev.,* 10th July, 1955.

[25] Again, since the benefits were staggered and only partially retroactive, the actual amount was somewhat smaller.

Thus one week after the strike began, at the latest, what had originally appeared to be the driving issues of the strike were already settled. This left only the union shop, and they did it up brown. "Why Does Steel Strike Go On Despite Best Wage Offer in Industry's History?" asks a nation-wide full page advertisement.

> "Companies believe real reason is Union demand for compulsory Union membership.
>
> "The steel companies have refused. . . . They will not be a party to coercing any individual, who, for reasons of his own, does not want to join the Union."

It was evidently felt that an "issue of principle" constituted a more acceptable appeal to public sympathy than sordid materialistic motives, so for the duration of the strike, acrimony revolved only around such topics as: *Would new workers have to give dues checkoff authorization when hired, even though it would not take effect until thirty days had elapsed? How long would their escape period be — ten or fifteen days? Would the escape mechanism be a stub attached to the membership application, to be filled out and sent to the company, or would it be a letter? If a letter, was it to be submitted by ordinary or registered mail? A copy to both union and management or to management only, with a provision for periodic union inspection? Woulld these new members have a fresh opportunity to leave the union at the end of the first year? Would old union members,* etc., etc. This sort of nonsense went on openly for forty-six days and became a little too much even for the press. When it was noted that only 120 steelworkers in ten years had taken advantage of the escape clause and that the companies already had union shop contracts with its captive miners and many subsidiary rail and shop workers, the sincerity of the protagonists had to be questioned. "Why," asked A. H. Raskin on 19th July, "do union and industry leaders hold out in such adamant fashion on such a minuscule issue?"

But no matter how heavy the strain on their credulity, one can usually count on the obtuseness (or sheer good-natured venality?) of the professional scribblers. The *Journal of Commerce,* an industry partisan, had a sophisticated apology as early as 16th June: "The union shop issue . . . has taken on an importance that far transcends its practical value for either the union or management. It has become a symbol. . . ." And a *Times* editorialist, having just returned from a session with *his* analyst, thought that he too detected a familiar syndrome. "What stood in the way of a settlement," he declared (21st July), "was not wages and related benefits. It was not even the union shop. . . . It was, rather, the pride and temper of both parties. . . ."

Government officials, on the other hand, professed to be at a loss to explain the impasse. In the opinion of Mr. Putnam, Economic Stabilization Administrator (27th July), the "dispute has been prolonged for no good reason. Some day I hope we shall know the real motives behind the mysterious conduct of the steel industry in this tragic incident. . . ." And Presidential Assistant Steelman called a special press conference (2nd July) so as to be "frank to say" that he didn't know what the roadblock was. It wasn't, "as everyone supposed", the question of the union shop, or wage and price increases, or even a company desire to unload heavy stocks of steel "because stocks aren't heavy". He suggested that the impasse might be a result of the "unit rule" under which the Big Six were operating, according to which the objections of a single member could veto a settlement. This childish type of evasion reveals the extent of official contempt for the mentality of American citizens. The unit rule is obviously a mechanism, not a motive.

Despite all diversionary disclaimers, the conviction was spreading that the real objectives of the strike were not quite so elusive. On 24th June, Joseph Loftus repeated "the belief of many informed persons that the large supplies of some types of steel is the major influence in the companies' decision [to prolong the impasse] and that when these inventories are reduced a price increase will be more meaningful and bargaining will be conducted on a more realistic basis". The steel industry did not feel that it could completely ignore such charges and on at least two occasions released *dementi,* which, unfortunately for them, were not sufficiently general. Alfred Friendly, *Washington Post,* 17th July:

> "Industry spokesmen deny, with all the vehemence at their command, the assertion that they want to see the strike continue for a while. They characterize the charge as silly and inconceivable, as well as vilely insulting."

And the reasons?

> "No man in the industry would willingly see the current food crop spoil in great volume because of a lack of tinplate for canning. No man in the industry would so gamble with national security as to bring about the great danger — now brewing — of drastic steel shortage in the event of renewed hostilities in Korea."

And in the *Times* of 13th July (unsigned):

> "Talk that some steel officials were looking placidly upon the strike because they were said to be hoping to see inventory used up is apparently being spread by those who are unfamiliar with the steel industry and its markets. Profits are going by the board, plant maintenance costs will be higher, damage is multiplying and customer plans are being knocked into a cocked hat: these are things no sane steelmaker wants to see. It is believed here that if there be those who take solace from this serious strike . . . they are made of straw and not of steel."

Now this is a challenging metaphor, and if the reader will grant pardon while there is removed the several layers of baling wire impeding examination of the industry rebuttal, attempt will be made to determine if its substance is — shall it be said — wispy?

(1) *The Case of the Spoiled Food Crop.* It didn't happen. As in any Grade B movie, the tin cans arrived "just in the nick of time" to separate Pauline from her perils.

(2) *Plant Maintenance Costs Will Be Higher.* Why?

(3) *Damage Is Multiplying.* How much?

(4) *Profits Are Going By the Board.* Really, this is happily brought up. Although U.S. Steel's net return for the second quarter was approximately 60 per cent less than in 1951, the company — with the aid of certain peculiarities in the tax structure[26] — actually made around 9 per cent

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[26] Company taxes for the third quarters of 1952 and 1951 were $23,000,000 and $115,000,000, respectively; for the first three quarters taken together in each of the years, they amounted respectively to $66,000,000 and $295,000,000.

more in the third quarter of 1952 than in the previous year!

But the real point is this: had there been no strike, how much would the companies have made, not only during June and July, but afterwards, in the fourth quarter of 1952 and in 1953? A comparison of first quarter 1951-52 returns may indicate the answer. For the eleven leading steel producers there was a decline of 21 per cent, for the fourteen smaller companies 41 per cent. Profits going by the board? One never reaps without sowing, although the steel industry, supplied with the bulk of its "seed" by the Bureau of Internal Revenue, came reasonably close.

(5) *Customer Plans and Cocked Hats.* If one looks at the statistics on shut-downs the effects of the strike on customer plans appear dreary indeed. Of the 1,460,000 unemployed at the time a settlement was reached, only a little more than half (760,000) were in steel and allied or service industries (coal, ore, railroads); the majority of the balance were in autos (400,000) and appliances, where layoffs were begun only three weeks after the initiation of the strike.

Yet there is some suspicion as to whether these shutdowns were really necessary. Hammond, for example, states flatly:[27] "The time picked for the strike was the best possible for both parties. . . . [According to] one of the country's best informed experts on steel supplies . . . the average stock in manufacturers' hands exceeded ninety days supply. This did not include additional reserves in commercial warehouses or steel products already in the fabricating stage. . . ." Did the automobile and appliance makers have their fair share of this? *Journal of Commerce,* 28th March:

> "Sheet steel such as is used in autos and refrigerators is so plentiful that many steel buyers, in recent weeks, have refused to take on additional supplies, owing to the shortage of warehouse space. . . ."

As far as the appliance field is concerned, suspicion is further aroused when we note (again in the *Journal,* 25th June) that, in some cases, "shutdowns are taking place . . . before the plants have run out of steel". And Alfred Zipser reports in the *Times,* 27th July:

> "The steel strike may have been a hammer blow to some industries but it was far from disastrous to appliance manufacturers. Reports last week indicated that the last uncomfortable inventories in factories were wiped clean and the industry appears to be in the strongest position it has held for a long time."

Autos? In one two-week period during the latter part of April and early May, list prices were reduced on Chevrolet, Cadillac and Kaiser-Frazer cars, and on Dodge trucks. What was the situation when the strike (estimated to have cost 443,000 vehicles) was over? On 1st August the *Journal* reported faithfully the cheerful lamentations of Detroit.

> "Automobile prices are going up again. . . .
>
> "Where industry officials adopted a 'wait and see' attitude on the price question a week ago, they now are resigned [*sic*] to the fact that a price boost is inevitable [*sic*]. . . .
>
> " 'Mark Twain was only two-thirds right,' was the wry [*sic*] comment of a spokesman. . . . 'That an increase in car prices follows an increase in steel prices is just as certain as death and taxes. That's for sure.' "

(6) *National Security: Great Danger Brewing.* There were a few (very few) well-publicized shutdowns in the armament field toward the end of the strike, but inventory estimates simply did not support any gloomy predictions. It is difficult to believe, for instance, that stocks in priority

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[27] *Current History,* November, 1952.

defense material. Unfortunately, implementation never went beyond the supply held by the average manufacturer, and according to a *Times* special from Pittsburgh (dated 8th June), they may have been "much bigger proportionately".

But again, if defense was really suffering a serious blow, why did not the President reopen plants, at least on a selective basis, under the Draft Law? His authority to do so was legally unequivocal, yet when reporters asked (12th June) whether he intended to invoke the act, he replied, according to the *Times,* with a "flat no". Secretary of Defense Lovett, faced with the same question a week earlier, was less blunt. He said "that the matter had been studied but that seizure would not be the answer because the quantities of steel to be thus obtained were not very promising". Periodically of course, to allay concern, all parties would announce their agreement in principle to a reopening of some of the plants for production of necessary defense material. Unfortunately, implementation never went beyond the committee stage. As Joseph Loftus ingeniously observed on 25th June, "The project apparently involved so many technical problems, as well as labor-management bargaining problems, that it is not going to yield much if anything. The union concedes that it is reluctant to send some of its members back to work in an area where other members would continue striking. The industry and the Government, for their part, seem unwilling even to ventilate the problems involved".

No, gentlemen. Strain as you will, it just won't wash.

The Settlement

Eight weeks and millions of tons of lost steel after the show opened, the three parties apparently decided that the situation had improved to such an extent that the strike could be called off. But even a tiresome farce must have its formal end. On 23rd July the President "summoned" Murray and Fairless to the White House. After telling them (this is the official version) that a settlement had to be obtained in twenty-four hours "or else", he closeted our two bad but now chastened boys together and left them to their own devices.

> "The talk [reports the *Times*] was on a 'Ben' and 'Phil' basis. Mr. Fairless made the first overture. He said in effect: We have got to take a whole new approach to each other. Something obviously is wrong. Management does not want to bust the union. It wants a healthy union. We've got to learn to get along together.
>
> "Mr. Murray responded in like vein, saying the union was not interested in simply damning management. The two sides then quickly ticked off the terms of agreement. . . ."

"That's all it took," says A. H. Raskin, ". . . confidence in one another's good intentions."

Mr. Murray had his wage increase and full employment, Mr. Truman a rising Gross National Product for the November elections, and the industry — ? "With much wringing of hands [reports the *Journal of Commerce*] the Government tonight officially broke through its own stabilization standards and ordered the price ceiling increase for carbon steel . . . which it had promised. . . ." And there was a "virtual guarantee [from the *Times*] that steel mills will operate at top levels for months to come. . . ."

Only one small detail remained. The strike had caused genuine suffering from Pittsburgh to Birmingham and for weeks after the White House settlement some plants were still closed because of the bitterness. Mr. Fairless and Mr. Murray had to perform the customary ritual of humility to pacify both the workers and the public. It was — we agree with *Life* — a dramatic finale.

> "Fairless went over to give a talk to the union's policy committee in Washington's Mayflower Hotel. He had a confession to make. During the strike he had kept away from his old home of Massillon, Ohio, because his coal miner father still lived there and 'has been in the United Mine Workers all his life' and because his older brother, a member of the Steelworkers, had joined the strike. . . . Then Fairless announced that he and Murray had agreed to make a trip together, visiting the company's principal plants and talking to all the workers — 'I'm going to find out what you're thinking about, and you may be interested in some of my problems'. When he was done the union leaders were standing and applauding. . . ."

And Murray? One can almost sense his mixed emotions. Oh, for only *one* relative to give to the company! Unfortunately, they were all comfortably ensconced in the Steelworker apparatus. Nevertheless, with the cry — "This is an unprecedented thing in the history of labor organizations" — it must be said he rose to the occasion.

In the first flush of gratification at Fairless' apology, the steelworkers probably missed its real significance. Translated by discrete instances into the vernacular of straw boss and shop steward, however, it could have only one meaning: "All right, boys, back to work. When we want you to take off again, we'll tell you."

"This the revolution has achieved," says *Life,* with quite another point in mind. "So many quantitative changes have taken place for U.S. labor that, as in physics, they have brought a change in quality as well. . . ." We agree. Persephone, dear Demeters of the Old World, has been diddled deep down and for good; she'll never be back. This is the Age of the Deep Freeze, and pomegranates keep — not for a season — but forever.

July 26th, 1955.

Peter Murray

THE RADIO BAN

THE Postmaster General's two Directives of the 27th of July of this year are a violation of the British people's right to discuss and disseminate freely all news about Parliamentary proceedings.

The first directive requires that the B.B.C. shall not arrange discussions or *ex-parte* statements on issues a fortnight before or during their debate in either House. The second clause of this directive aims expressly at M.P.s and forbids them to broadcast on the subject of any legislation before Parliament.

The official assertion of the fortnight rule, as the above ukase is called, merely affirms a practice based on a *gentleman's agreement* between Transport House and the Conservative Central Office made in 1948 behind the backs of both the public and Parliament. Although the B.B.C. requested of the leaders of the Labour and Conservative Parties that the rule be abandoned (at the same time assuring that the clause affecting M.P.s be left intact) it deemed it necessary, were the rule to continue, to *request* of the Postmaster General that it be regularized by a directive. Formally only the Corporation decides what is or is not to go on the air. Its timorous acquiescence, however, in the behind-the-scene manœuvres of the party bosses to overrule the public and Parliament clearly reveals the sham independence of the B.B.C.

The first time a wider public saw the implications of the gentleman's agreement was at the last General Elections when all party effort was concentrated on the suppression of "irresponsible discussion" (Churchill) on the Government decision to manufacture the H-bomb.

It is therefore not accidental that the directive of the Postmaster General quickly follows the Party Bloc's suppression of discussion on the H-bomb issue, for the last six months have witnessed the growth in all spheres of society of opposition which views with growing concern the suicidal atomic policies of the Government. The deliberate avoidance of discussion on such a crucial subject shows that both parties co-operate in attempting to block any expression of public anxiety when attention is focused on vital issues before Parliament. Consequently more and more people are reaching the conclusion that today's major problems are beyond party politics. A conclusion which is, needless to say, anathema to both party machines. The hyper-sensitivity of authoritarian machines to all criticism is an additional reason for the introduction of the directive. Since Sir Richard Acland exposed Bevanism as nothing more than an official red herring it no longer has the same support or appeal in the Labour Party. And within the Conservative Party voices are heard criticizing the "Property-Owning Democracy" of the Progressive Conservatives as no different from "Socialist Nationalization".

And what are the M.P.s doing to safeguard their own interests and those of the public? Practically nothing. Those M.P.s who condemned the fortnight rule can be counted on the fingers of two hands; the remainder are silent — as they have been ever since the rule first came into force. Recently in the House of Commons Sir Anthony Eden advised members "to see how this [the ban — P.M.] really worked out, and not to get too perturbed by some of the rather unnecessary, frenzied agitation outside" (*Times*, 26/10/55) and went on to say that "he could not see how it affected the real rights of free speech". This short dissertation on real rights was received with cheers. It is now certain that the vast majority of members will accept the directive with continued obedience to the bludgeoning commands of the party machines. Their slavish acceptance of this authoritarian edict demonstrates that the "authority of Parliament" is no more than a front to the tutelage of the party leaders who must at all costs preserve the hegemony of the Party apparatus.

The full extent of the rule and its effect upon discussion can be gauged from an article by Dingle Foot in the *Observer*, 7/8/55.

> "Suppose that at the beginning of a session a private Member introduces a Bill under the ten-minute rule designed to regulate the production of nuclear

> weapons in this country. Neither its author nor anyone else expects that it will ever receive a second reading. It merely remains on the Order Paper until the session ends. But the fact that it has been introduced will prevent any Member of Parliament from taking part on any broadcast discussion on nuclear weapons for the next twelve months. If, as may easily happen, there is a spate of private Members' Bills, there will be a formidable list of subjects which Members of Parliament are forbidden to discuss over the air."

Sir Robert Boothby, one of the few M.P.s who has openly denounced the directive and made public a few examples of the behind-the-scene moves which culminated in the introduction of the directive, thinks that it is unenforceable in practice, and says that

> "For a month we shall be free to discuss what we like. Then we will reassemble [for the Autumn Session — PM], and we shall presumably be required to guess the subjects which are to be debated during the next fortnight — a task which will dmand unusual prophetic powers because no one on earth knows what the business of the House of Commons is to be for more than a week ahead. On top of this we shall be required to make a note of every Bill that is introduced, including private Members' Bills, and remain silent on every subject with which they deal until they either receive the Royal Assent or are withdrawn."

He concludes his letter to *The New Statesman and Nation* (13.8.55) with this declaration:

> "For my part I do not intend to pay the faintest attention to an Order which, if it were not so ludicrous, would be one of the most formidable menaces to freedom which our democracy has had to face in this century."

Boothby is mistaken in supposing that the ban is unenforceable for although the BBC may allow a certain lattitude in the interpretation of the rule it is certain that on all vital issues strict observance will be enforced. Sir Robert Boothby and all M.P.s of similar mind are therefore confronted with the task of fighting for the abolition of the rule. To limit the struggle to individual acts of disobedience of the Order would assuredly be insufficient as the bureaucracy is the omnipotent master of the party; it would either force unorthodox M.P.s to toe the party line or expel them from the party. In any case the BBC (and possibly the ITA) may find that the services of "unsuitable" M.P.s are no longer required.

The simple and only way to insure that the directive is withdrawn is for M.P.s to mobilize their constituencies; by doing this both solid support for a protest will be established and a means of defying the party machine created. The time is long overdue for the reaffirmation of the fact that M.P.s are representatives of the electorate and not party pawns. Sir Robert Boothby is in a particularly favourable position to carry out such a task. He represents Aberdeen, a constituency menaced by the second as well as by the first directive.

The second directive which was made public simultaneously with the first forbids the Corporation to transmit regional party political broadcasts. The enforcement of this ban nullifies one of the articles of the BBC Charter which acknowledges the "distinctive culture, interest and tastes" of various regions. The discovery of the party bloc that this article "was not intended to authorize regional party political broadcasting" deprives those sections of the community whose mother tongue is not English of the opportunity of listening to controversial political broadcasts in their vernacular. So much for the much bandied concern for minorities. A resolution by the National Broadcasting Council of Wales is emphatic on this aspect of the directive when it declares that this ". . . is to ignore the fundamental difference which is the reason for the existence of the National Broadcasting Council itself". (*Times,* 28.7.55.)

Before the introduction of the ban the regional Broadcasting Councils were legally entitled to arrange party political broadcasts and the primary reason for the rescinding of this right is that demands for regional party political broadcasts have come from both Scotland and Wales. The Broadcasting Council of the latter country intended to arrange a series of broadcasts on Welsh affairs, not excluding questions that would involve legislation. It recommended that facilities for such broadcasts be given to representatives of all political parties which had put forward three or more candidates at the preceding General Election.

It is significant, as a letter to *The Times* points out, that the Welsh offices of both the Conservative and Labour Parties generally approved (with various reservations) of the Council's proposal and that it was only the intervention of the national party leaders that led to a total suppression of party political broadcasts in the regions. This action of the party leaders demonstrates unmistakably that the aim of the second directive is the suppression of minority opinions, especially nationalist opinion in Wales and Scotland, in the interests of the hegemony of the two main parties.

Although both directives are a direct inroad into the freedom of speech which the Press pretends to value so highly, it confined itself to lukewarm admonitions of the party bloc and the publication of a few letters of protest. *The Times* treated the issue with its usual ambiguity and played the game of Dr. Jekyll and Mr. Hyde. In an editorial of the 29th July it approved of the directive prohibiting local broadcasts as "sensible" and characterized the NBCW's resolution as "naive" (because the Welsh Council affirms the right of minority opinions and believes in democratic practice). The editorial, however, correctly pointed out that the fourteen day rule aims at the creation of a closed shop for debate for the Parliamentary parties. It advocated that public opinion should strenuously fight the ban. This is all to the good and would even be convincing had *The Times* not condemned in its premises what it hypocritically advocated in its conclusion.

Apart from the small minority of M.P.s there remains only the NBCW which could become a rallying point for public opinion. The Council has declared its intention of doing all it can to ensure that, in spite of the ban, all political views in Wales, including those of minorities, shall have adequate means of expression in the Welsh Home Service. This is a courageous beginning which may encourage the NBC of Scotland and the newly formed ITA to ignore the existence of the ban. In the struggle for the abolition of the ban the regional Councils and the ITA should give the widest publicity to the issue in their respective regions by challenging the Government and the two parties to debate the issue on the air and by encouraging those M.P.s who have protested on their behalf.

M. Klerer

THE FLUORIDATION EXPERIMENT

THERE is no doubt that the large and quite possibly rising incidence of dental decay in the United States presents a medical problem of primary concern. The prevailing approach, supported by the U.S. Public Health Service, has been to attack the problem with direct chemical medication. Consequently, the past few years have seen an attempt to prevent caries development by the application of various chemical solutions directly to children's teeth. Varying degrees of beneficial results have been claimed for these procedures. In addition, the past ten years have also witnessed the growth of another, perhaps unique, approach to the prevention of dental decay — the fluoridation of the public water supply. In an application which is tantamount to involuntary mass medication, several types of fluorides, in trace amounts, are added to the public drinking water — available to all, young or old, healthy or ill, the vigorous and the infirm. Since, heretofore, these fluorides had been used as a chief ingredient of rat and roach poison, and since in particular sodium fluoride, which is used in many fluoridation programs, is a poison of extreme toxicity (a good sized pinch will be fatal to a child) it is not difficult to understand that this program has met with strong opposition from certain lay groups, some professional men, and has been the subject of inquiry for two Congressional Committees.

However, the sponsors of the fluoridation experiments claim reassuring results with respect to any possible toxic consequences and are quite unambiguous about the large reduction in dental decay. One of these sponsors, the Director of Public Health in New Haven (Conn.) states:

> "Many reasons have been given as to the cause of dental decay, including poor diet, excessive intake of carbohydrates, lack of proper dental hygiene, etc. None of these has withstood close scientific scrutiny.
>
> "In the last ten-twenty years, medical and dental authorities have recognized that dental decay is in part a deficiency disease caused by the lack of adequate intake of fluorine. Mass experiments carried out in Newburgh, N.Y., Brantford, Ontario, now going into their tenth year, have proved this beyond a shadow of a doubt." (New Haven *Info*, December, 1954.)

Another sponsor, Dr. J. Roy Doty, an officer of the American Dental Association, is reported as stating that the scientific evidence of the benefits and safety of fluoridation is "over-whelmingly conclusive" and that it would be impossible to drink enough properly fluoridated water to produce a toxic effect. (*N.Y. Times*, 25th March, 1955.)

Still further, Dr. William A. Fennelly, president of the N.Y. State Dental Society, points out that: "The only known effect of controlled fluoridation is the reduction of tooth decay in children by approximately 65 per cent." (*N.Y. Times*, 6th October, 1954.)

Nevertheless, despite official representatives of the medical and dental professions who have given support to the fluoridation program, popular opposition has been frequently encountered in those cities where fluoridation was proposed. Whenever the issue has come to a popular referendum the scheme has usually been defeated. This strange antipathy to official opinion has been subjected to a study (*Scientific American,* February, 1955) by Bernard and Judith Mausner, *social psychologist* and physician, respectively — a study which purports to lay bare the roots of the "anti-scientific attitude". Since: "Fluoridation is an excellent example of the *careful* application of scientific knowledge to a problem" (emphasis added — M.K.), they attempt to show that the opposition to this measure stems form a "national epidemic of irrationality". Consequent to their view that the effectiveness of fluoridation has been so well proven that it no longer need be considered an experiment, is the feeling that this program, as compulsory mass medication, is in the same category as smallpox vaccination and that any invasion of individual rights therefore is minor when weighed against the benefits to be gained. They conclude that ". . . *the objections to fluoridation, however unrealistic or unfounded, have deep psychological roots*".

Their thesis is illustrated by an investigation they conducted of Northampton, Mass., where fluoridation was defeated by a vote of two to one. They found that a large proportion of the opposition to fluoridation had failed to finish high school and that the majority of the better educated populace favored fluoridation. It would seem that the opposition to fluoridation was characterized by a pervasive attitude of suspicion toward scientific organizations and scientists and was inclined to the opinion that the chemical industry favors fluoridation, regardless of the possible dangers, since they stand to profit from it. The fact that some of the well educated professed to accept scientific authority yet rejected fluoridation is explained as ". . . unconscious rejection of these sources". To these authors the arguments against fluoridation ". . . are clearly related to the *Zeitgeist,* the current suspicion of scientists, the fear of conspiracy, the tendency to perceive the world as menacing".

Their article brought forth some vigorous letters of protest to *Scientific American* (April, 1955). In their reply to these letters, the Mausners state:

> "Controlled epidemiological studies of populations which have been drinking naturally fluoridated water for generations, and of those which have had artificially fluoridated water, have indicated that fluoridation is not dangerous; it does work. At this point the only basis for controversy would be the presentation of new data."

And that:

> ". . . the crusaders who form the core of the anti-fluoridation campaign appear to be motivated in part by a generally anti-intellectual attitude. The evidence for this is their rejection of the consensus of relevant scientific opinion."

It is not amiss then to take up the Mausners as they present themselves — spokesmen of the consensus of *official* scientific opinion. Nor will it prove necessary to provide "new data" — it shall suffice to examine what is *publicly* available, organize and interpret it, and attempt thereby to give the basis for the fluoridation program. The fluoridation controversy is of interest not only intrinsically, because of the interesting questions it raises, but also as a vehicle to picture the state of the medical scientific method as revealed in concrete, day to day, practice. (Whether this is typical of the methodology of all scientific fields is a subject for another study.) To this end the reader is requested to bear with extensive quotation and liberal use of statistics from "authorities" so that there will be no mistake as to their precise meaning. A sincere attempt will be made to be "intellectual" throughout; but as for the *unconscious* — only the knowledge of writing *consciously* is employed here. All "unconscious" considerations are left to those experts who are better versed in these subtle matters.

* * *

The relation of fluorine to dental health was first elucidated in the early 'thirties when it was found that children reared in areas whose water supply contained trace amounts of fluorine revealed a dental condition called *mottled enamel* (dental fluorosis). Mottled enamel is characterized by the presence of dull chalk-white irregular patches or striations. The teeth show a loss of their normal translucency and appear unnatural. In severe cases the enamel may be pitted and corroded making it difficult to fill decayed teeth due to the ensuing structural weakness and fragility. As a secondary phenomenon, the teeth may show a permanent discoloration in later life, varying from dark brown, almost black, to yellow, being more pronounced on the upper central incisors. The effect is prevalent only on those individuals resident in fluorine areas during childhood. Normally formed teeth will not become mottled if the individual is exposed to fluorine bearing waters in later life and mottling of deciduous (baby) teeth is a rare phenomenon in the United States. (Smith, M. C., *et al.*, U. of Arizona Tech. Bull. No. 32, 1937; Zimmerman, E. R., Pub. Health Rep. 69, 1115, 1954.)*

Subsequently it was noticed that children from these areas apparently showed less decay than "normal". Studies made of a score or so cities, with varying concentrations of fluorine, attempted to fix the "optimum" level at which the supposed reduction of decay was a maximum with the associated mottling at a minimum. There is surely much to criticize in this work done by a small group of investigators associated with the Public Health Service. For instance, the work was done principally with children. Furthermore only a limited number of cities were investigated — very few at the "optimum" level. These studies have also been criticized on the ground that the cities selected were not representative of the supposed relationship between the number of caries free children and the fluorine concentration of the water. It has also been contended that these crucial cities, in part, had variable or uncertain water histories.[1] However, since it is generally recognized that the validity of the fluoridation program must be dependent on the results from the *artificial* fluoridation experiments, a detailed analysis of the historical basis can be safely put aside. The dental data for the artificial programs are more complete and are subject to progressive comparison with those cities, not fluoridated, which were used as controls. The artificial fluoridation argument relies heavily on the statistical results reported for Grand Rapids, Michigan, and for Newburgh, New York. (Arnold, F. A., *et al.*, Pub. Health Rep. 68, 141, 1953; Dean, H. T., *et al.*, Pub. Health Rep. 65, 1403, 1950.) Consequently these reports require analysis in some detail.

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* In citation of Journals the first group of numbers represents the volume number, the second the page number, and the last the year of publication. Authorship is stated only if the senior author is not mentioned in the text.

Hearings before the House Select Committee To Investigate The Use of Chemicals in Food and Cosmetics, Part 3, 1952 are abbreviated as *Food Committee*. Hearings before the Committee On Interstate And Foreign Commerce, H.R. 2341, 1954 are abbreviated as Commerce Committee. Fluoridation as a Public Health Measure, Ed. J. H. Shaw, American Association for the Advancement of Science, Washington, 1954 is abbreviated as AAAS-1954. Dental Caries and Fluorine, Ed. F. R. Moulton, American Association for the Advancement of Science, Washington 1946 is abbreviated as AAAS-1946. Fluorine and Dental Health, Ed. F. R. Moulton, American Association for the Advancement of Science, Washington, 1942 is abbreviated as AAAS-1942.

[1] For instance, see the excellent testimony of Dr. F. B. Exner before the Committee on Interstate and Foreign Commerce, Hearings on H.R. 2341, 1954.

* * *

The water supply for the city of Grand Rapids has been subject to fluoridation since 25th January, 1945. Commercial grade sodium fluoride was used in sufficient amounts to maintain a concentration of 1 ppm (*part per million*) of fluorine within a 0.2 ppm range. The city of Muskegon, Michigan, which has the same source of water was chosen as the city whose dental decay rates were to be used as a comparison throughout the study. The dental decay information from the city of Aurora, Illinois, whose natural water supply contains 1.2 ppm fluorine was used to establish the "ideal" situation to which the city of Grand Rapids was to be brought. The controlled conditions of this experiment remained unchanged until July, 1951, when Muskegon started adding fluorides to its water supply.

Prior to fluoridation, basic dental examinations were made in Grand Rapids and Muskegon during the period 1944 to 1945. Thereafter, there were annual dental examinations in each city. For Grand Rapids there were nearly twenty thousand continuous residence children involved in the 1944-1945 examinations, dropping to nearly forty-six hundred in the 1951 examinations. For Muskegon, over four thousand were examined in 1944-45, declining to about two thousand in 1951. The authors of the Public Health Service report, Doctors Arnold, Dean, and Knutson, in discussing the reduction of dental caries observed in Grand Rapids' children subsequent to fluoridation of their water supply, make the frequently quoted statement ". . . comparison of the 1951 and 1944-45 findings on permanent teeth shows this reduction to vary from 66.6 per cent in the six-year-old children to 18.1 per cent in the sixteen-year-olds". The decay rate of the permanent teeth of the Grand Rapids six-year-old children was 0.775 DMF (Decayed, missing or filled) per child during 1944-45 and 0.259 DMF per child during the 1951 examinations thus giving the stated reduction of 66 per cent.

However, within the period 1944-45 to 1951, fluctuations of the DMF rate give a somewhat different picture. Thus, if we examine the decay rate for this same group (six-year-olds) for the year 1946 (0.234 DMF) and compare this to the decay rate for 1949 (0.380 DMF) we find that ostensibly there has been an *increase* in decay of 62 per cent. Pursuing the discrepancy further — with 1946 as the base year and comparing to the results for 1951 — there appears an *increase* of over 10 per cent in decay for this same group. Clearly the decay rate, as a function of time elapsed during fluoridation, is anything but "mathematically precise". These variations are found consistently in the data for the other age groups as well. Hence, if we compare the decay rate of permanent teeth for Grand Rapids children who were five years old during the 1950 examination (0.028 DMF) to those children who became five years old during the 1951 examination (0.048 DMF) we find an *increase* in decay of over 70 per cent. It is of course true that for this same group we could just as well have gotten a tremendous decrease in decay by picking the appropriate years judiciously. The unreliability of these statistical conclusions can be further illustrated by comparing the results for seven-year-olds in 1949 with those in 1950. Here, over a one year period, we find an *increase* in decay of 36 per cent. On the other hand the results for eight-year-olds show only minor variations and give an overall decrease of 46 per cent from the 1944-45 period to 1951. The figures for nine-year-olds behave similarly.

Continuing in order to present the full picture: the ten-year-old group shows an approximate 25 per cent decrease in decay from the 1944-45 examination to the 1946 examination. This, however, is a rather large figure in view of the fact that they were subject to fluoridation for not more than two years. The eleven-year-old group shows a similar large decrease of approximately 34 per cent in the initial two-year period but an *increase* in decay of about 32 per cent from 1947 to 1949, with an over-all decrease of about 43 per cent from 1944-45 to 1951. The twelve-year-olds show an *increase* of 18 per cent between the 1944-45 basic examination and the late 1945 examination, an *increase* of 18 per cent between 1947 and 1948; both decay increases camouflaged by an over-all decrease of about 27 per cent from the base year to 1951. The thirteen-year-olds also show an *increase* of over 10 per cent between the basic examinations and 1945 with an over-all decrease of 32 per cent between the base year and 1951. Again, the fourteen-year-olds show an *increase* between the base examinations and 1945 again concealed by the over-all decrease of about 25 per cent. For the fifteen-year-olds, there was a slight *increase* in 1945, a decrease in the next three years, followed in 1949 by an *increase* in decay of about 11 per cent over the previous year, the entire fluctuation still covered by an over-all decrease of nearly 29 per cent between the base year and 1951. The figures for the sixteen-year-olds continue to bounce without meaning: although the apparent decrease in decay between the base year and 1951 is about 18 per cent, there is an *increase* in decay of nearly 45 per cent between 1946 and 1948.[2]

The claimed reduction of decay in 1952 for the six-, seven-, eight-, nine-, and thirteen-year olds are 70.8 per cent, 52.5 per cent, 49.2 per cent, 48.1 per cent and 39.7 per cent respectively (Nat. Res. Council, Publication 294, 1953, cited in Commerce Committee, p. 475). This represents an improvement of 4.2 per cent for the six-year-olds, a slight setback for the seven-year-olds since the reported 1951 reduction was over 55 per cent, a slight gain for the eight-year-olds, practically no change for the nine-year-olds, and a nearly 8 per cent improvement for the thirteen-year-olds. Figures for the other age groups are not given.

Since it is claimed that fluorine plays a dental role only during the period of teeth formation, these figures can be meaningful only for the younger age groups. But even this possibility of value must be discarded since the low absolute values of the DMF rating and the large variations from year to year make the claimed reduction of over 66 per cent a ridiculous assertion. In addition the large innate variation in the results of dental examinations, though by the same examiners (which was not even the case in the Grand Rapids study) make the results in general subject to doubt.

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[2] The figures given are derived from data presented in Pub. Health Rep. 68, 141, 1953 and are indicated only to slide rule accuracy.

The figures presented for Muskegon, the "control city" (no fluorine) generate an even more horrible statistical nightmare. Still considering the amount of decay present in the permanent teeth, which should apparently remain more or less constant in this "control city", we find a reported *increase* of decay of over 200 per cent in the five-year-old group between 1946 and 1949; a reported *decrease* in decay of 40 per cent between the base year and 1946 for the six-year-olds, and an *increase* in decay of 66 per cent between 1946 and 1951. Those children who were seven years old in 1948 showed more than a 100 per cent *increase* in decay over those children who were seven years old in 1947, although comparison between the base year and 1951 gives a slight *decrease*. The ten-year-olds show an *increase* of 35 per cent between 1947 and 1948 although the base year to 1951 comparison shows a *decrease*. The variations are similarly evident for the eleven through fifteen-year-old groups. The sixteen-year-old group shows a magnificent decay *decrease* of nearly one-third from 1946 to 1947 — a large variation significant in view of the relatively high value of the absolute DMF rates (19 to 12), and therefore the lessened chance that an oversight of one defective tooth, here or there, might affect the results. Here too it then appears that if these figures are of any value, it is only in the direction of demonstrating the unreliability of dental statistics, and the equal reliability of the conclusions that may be drawn from them — since the *apparent* over-all pattern must be subject to doubt if its individual elements are in contradiction with each other and inconsistent with the pattern.

The Grand Rapids study cannot be left without some mention of the decay rates found for deciduous (baby) teeth. As an indication of the scale of the numbers used, we may note that the *def* (decayed, extraction indicated, or filled deciduous teeth) rate varied approximately from about 2 to 7 *def* for the four- to nine-year-old groups, about 2 to 3 *def* for the ten-year-olds, 1 to 3 *def* for the eleven-year-olds, about ½ *def* or less for the twelve-year-olds, and between 0.1 and 0.29 *def* for the thirteen-year-olds. Keeping the scale of these figures in mind, we can note that the four-year-old children in Grand Rapids showed an *increased* decay of nearly 29 per cent in their deciduous teeth from the basic examinations to late 1945 although comparison of the base examinations to 1951 give a *decrease* of nearly 50 per cent — once more a result which is meaningless in view of the large internal variation. Just to pick out the more glaring variations, we might note that the eight-year-old Grand Rapids children show a 38 per cent *increase* in decay from the base examination to 1945 but reveal about a 29 per cent *decrease* when the base examination is compared to 1951. The eleven-year-olds show a more than 100 per cent *increase* in decay from the 1944-45 base examination to 1947. The twelve-year-olds show a 138 per cent *increase* in decay from 1947 to 1948 although the comparison between the base year and 1951 gives a substantial reduction in decay.

The figures for the deciduous rate of decay for Muskegon, the "control city", would fare no better under such an analysis — and the reader will be spared the agony of a detailed presentation. But again appears the strange significance of taking *def* ratings of the twelve-year-olds in Muskegon which present an apparent *increase* of about 375 per cent from 1946 to 1949 with an apparent *decrease* in decay from the base year to 1951.

Since the Grand Rapids-Muskegon study is put forward as one of the most carefully controlled studies, and since H. T. Dean, usually given credit for the discovery of the "relationship" of dental caries to fluorine content of the water supply, is one of the senior authors of the Public Health Service's reports on this experiment — the above astonishing compendium of figures is not without meaning for the whole fluoridation program.

* * *

The other major keystone for the artificial fluoridation program is made up of the statistical results reported for the Newburgh-Kingston experiment. Sodium fluoride has been added to the Newburgh water supply since May, 1945, at levels sufficient to maintain a fluorine concentration of 1.0 to 1.2 ppm. The basic dental exams for Newburgh were performed during 1944-45 and for Kingston, the control city, during 1945-46. Pits and fissures were not counted as a carious defect unless there was visual evidence of caries, or if the sharp dental explorer sank into soft dentine. However, evident caries with involved surfaces were noted.

It is particularly difficult to analyze the results in any way similar to the Grand Rapids study. Of the official reports relating to dental findings (Ast, D.B., *et al.*: Am. J. Pub. Health 40, 716, 1950; J. Am. Dent. Ass. 42, 188, 1951; Oral Surg., Oral Med., Oral Path., 6, 114, 1953), one paper published in 1950 gave the results after three years of fluoridation, one published in 1951 stated the results after four years, and the third published in 1953 contained the results after six years of fluoridation. Each of these papers was published in different journals. To add to the burden of analysis, the 1950 paper states figures for the *combined* ages six-seven, eight-nine, and ten-twelve (three categories) while the other two papers give the figures in terms of each separate age category (seven categories). The figures for decay are reported in terms of DMF rate per 100 erupted permanent *teeth* instead of the DMF rate per *child* used in the Grand Rapids study. That this makes at least some *statistical* difference may be seen by comparing the published figures for the DMF rate per 100 *teeth*, six years after fluoridation, to those figures, published in a N.Y. State Department of Health brochure, (*Water Fluoridation*, Reprinted from *Health News*, 31, 1, 1954), which gives the decay rate in terms of DMF per *child*. For example, the ratio of caries experience per *child* for Newburgh to Kingston, during the base year examinations, is for the six-year-olds exactly 1. Yet the same ratio, in terms of DMF per 100 *teeth*, is 8.5 to 7.2.

If we compare the 1951-1952 results (also six years after fluoridation) for the seven-year-old grouping, then the Kingston to Newburgh ratio for permanent teeth is 1.1 to 0.3 in terms of DMF per *child* but is 12.4 to

3.8 in terms of DMF per 100 *teeth*. This last gives a difference of 40 per cent if the ratios are expressed in percentage terms. While these apparent discrepancies may possibly be due to the dropping of an extra decimal place in these small absolute figures, it is not an idle calculation.[3] Computations in terms of DMF per 100 teeth, because of the larger numbers involved, may appear to be more reliable, but this reliability also becomes fictitious when one realizes that examinations are performed on *individual* children. Per six-year-old child one is dealing with a statistical rate of the order of one-half a DMF. Considerable caution is warranted in accepting examination figures that purport to show huge reductions on such a basis. The effect of examiner error or misinterpretation is too large here (even if checked by x-ray analysis). For the older age groups (and here we consider the results from other experiments also) where the chance of examiner error is less, the claimed results are much less if not insignificant. It bears repetition that, throughout, the entire basis of the fluoridation argument rests on the results for the younger children.

A few more weaknesses in the statistical structure of the Newburgh reports may be mentioned. Dr. Ast, the director of the Newburgh experiment, in his testimony before the Congressional Food Committee, presents tables to show that for five- to six-year-old children with caries free deciduous cuspids, first and second molars, the "Newburgh rate (is) 64 per cent higher than (the) Kingston rate" for 1950-51. For this year, the number of children, this age, who had no decay was 30 per cent in Kingston and 49.2 per cent in Newburgh — an absolute difference of only 19.2 per cent. But by the miracle of modern dental mathematics, he can, quite correctly, state that 19.2/30 represents a 64 per cent higher rate of caries free children. However, if we took this same mathematical liberty we could, just as correctly, state that since Kingston (the control city) had 21.9 per cent children, five-six years of age, caries free in 1945-46 but in 1950-51 had 30 per cent caries free, then Kingston *without the benefit of fluoridation,* in a period of five years had a 37 per cent increase in the number of caries free children. Of course 37 per cent is not quite so striking as 64 per cent — but still illustrative of the benefits achieved by . . . the grace of God? Yet we must compliment Dr. Ast. He is really very modest in his manipulations. In the Hearings before the Commerce Committee (p. 421), an authoritative report by Z. M. Stadt is presented which shows that the number of caries free children in Newburgh has increased 170 per cent during this period — a simple feat accomplished by comparing the 1950-51 rate (49.2) to the 1944-45 rate (18.2).[4]

With these huge numbers whirling in our minds we can then take in its proper context the claim that the age adjusted DMF rate per 100 permanent teeth of children, age six to twelve inclusive, in Newburgh (13.0) is

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[3] A real difference would arise if the average number of teeth present were different between the two groups.

[4] One can also find the same figure in Dr. Stadt's article in the "authoritative" reference volume "Fluoridation as a Public Health Measure", (J. H. Shaw, editor, A.A.A.S., 1954) which in the preface states: "The eminent qualifications of each of the chapter authors should be sufficient evidence as to the high caliber and unbiased authenticity of the contents". There is something to be said later about the "caliber" of this volume.

40 per cent lower than the Kingston rate (21.7) for the 1950-51 examinations and that the *def* rate for children age five to eight in Newburgh is 35 per cent lower than in Kingston for the same year. The results for the 1953-54 examinations appear to strengthen still further the argument for fluoridation with a reported 60 per cent reduction in dental caries for the permanent teeth of Newburgh children as compared with Kingston children (*N.Y. Times,* 12th and 23rd April, 1955).

Yet to the analytical eye there seem to be contrary indications. From independent examinations done by the State Education Department, during the year 1953-54, it would seem that *Newburgh* children had a *total* health defect rate approximately 50 per cent higher than that of Kingston. (Statistical Summary, 1953-54, Bureau of Health Service, U. of State of N.Y.). Still more revealing, it would seem that the *proportion* of *Newburgh* children with dental defects was also approximately 50 per cent higher than that of Kingston! (Letter from J. A. Forst, State Education Dept., N.Y., as cited in the Congressional Record, A3275, Remarks of Hon. Roy W. Wier, 12th May, 1955.) Unfortunately, a strict comparison of these results with those reported in the Department of Health Newburgh-Kingston Study cannot be carried out with rigor. The varying deficiencies and omissions prevent this. In Kingston the dental examinations were conducted by the school physician using open mouth, tongue blade inspection. In Newburgh the dental examinations were conducted by dental hygienists using a mouth mirror and explorer. General health examinations in each city were, indeed, conducted by physicians. But it should be borne in mind that the Education Department's reporting of dental defects did not differentiate between caries, gingivitis, malocclusion, etc., nor did it indicate the number of dental defects per child. Nonetheless, these results are inconsiderable contradistinction and cannot be dismissed lightly.

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There are a number of subsidiary props to the fluoridation argument. Though for the most part minor, they must be considered lest, with the crumbling of the main buttresses of Newburgh and Grand Rapids, they be suddenly thrust forward as major underpinning.

Sheboygan, Wisconsin has had a fluoridation program since 1946. The benefits cited (Commerce Committee, p. 421 ff; AAAS-1954, p. 9 ff) are not as large as those for Newburgh but the claims lend substantial weight to the fluoridation argument. Unfortunately, the study has not been printed in a professional journal and consequently cannot be subjected to analysis. The claimed benefits occurring to Lewiston, Idaho, fluoridated since 1947 do not lend themselves to examination for the same reason. Madison, Wisconsin has used *hydrofluoric acid* in its water supply since mid-1948. No results are available as yet for the permanent teeth.

Sodium fluoride, sufficient to maintain a concentration of 1.2 ppm fluorine, has been administered to the water supply of Brantford, Ontario, since mid-1945 (Hutton, W. L., *et al.,* Can. J. Pub. Health 42, 81, 1951). The reported results for the period 1944-1950 present a picture which is more internally consistent than the American experiments. After five years of fluoridation, a reduction in the total (permanent plus deciduous teeth) decay rate of 54 per cent is claimed for the five-year-olds and a 43 per cent reduction for the six-year-olds. There is a claimed reduction of 11 per cent for the eleven-year-olds and a reduction of 12 per cent for the fourteen-year-olds. But these figures are difficult to reconcile with the claimed reductions of 28 per cent, 26 per cent, 25 per cent for twelve-, thirteen-, and fifteen-sixteen-year-old children. Also, the DMF rate for the permanent teeth of six-year-old children in 1951 is nearly double that of the previous year (AAAS-1954, p. 15; Commerce Committee, p. 424). The most recent figures for this group also seem to indicate an increase in decay since 1951 (Commerce Committee, p. 475).

The results from Evanston, Illinois, are, as usual, mixed. Favorable consequences are reported for the DMF rate of permanent teeth with a decrease in decay of 73 per cent claimed for the six-year-olds after forty-seven to fifty-eight months of exposure to fluorine (Hill, I. N., *et al.*, J. Dent. Res. 31, 346, 1952). The results for deciduous teeth were unfavorable, since while in 1951 the six-year-olds showed a 7 per cent decrease in decay compared to 1946, the seven-year-olds showed a slight increase and the eight-year-olds showed an increase of nearly 17 per cent. Fluoridation for the Evanston children was also unfavorable in that the number of caries free children decreased subsequent to fluoridation.

The published paper on Ottawa, Kansas, gives unmistakeably unfavorable figures. This community had 0.3 ppm fluorine content prior to 1946 when it was artificially raised to a level of 1 ppm. Dental examinations made after three years of fluoridation showed that the decay rate in children five-six years of age had more than doubled and that the number of caries free children had decreased by nearly half (Scrivener, C. A., J. Dent. Res. 30, 465, 1951). A more recent unpublished statement claims that this trend has been reversed and sees a slight positive result. (AAAS-1954, p. 15.)

Charlotte, North Carolina, after more than thirty months of fluoridation, states unhappy consequences for the deciduous teeth of children and contradictory results for the permanent teeth (AAAS-1954, p. 15). White children age five are reported as having a 54 per cent decrease in DMF rate while Negro children of the same age had only a 21 per cent decrease. Six-year-old white children had a 9 per cent decrease in decay but the Negro children suffered a 10 per cent. *increase.*

* * *

That virtually all the statistics are inconsistent and contradictory is not unique in the realm of dental research. Within recent years B. Gottlieb, a dental scientist of some stature, developed a technique for impregnating teeth with zinc chloride and potassium ferrocyanide. The reports of the clinical result of this method made by several independent investigators indicated that the incidence of dental caries was reduced 80 to 90 per cent. However, another series of investigations using Gottlieb's technique, made by equally prominent research workers, indicated that no gains were to be obtained (as cited in Anderson, R. W., *et al.*, Pub. Health Rep. 66, 1064, 1951). Bibby and Brudevold have summarized the literature pertaining to the topical application of fluorides where various techniques are used to impregnate the teeth (AAAS-1954, p. 148 ff). The reviewers present extensive tables on the effects of sodium fluoride solutions. Although they seem to see some rational pattern in these results,[5] it is more appropriate to regard them as simply chaotic. Caries reductions which vary from minus 33 per cent to plus 97 per cent are claimed by various authors. The oddity of the figures is emphasized by the data relating to fluoride compounds other than sodium fluoride. One worker will report a high caries reduction while another, using the same compound and similar technique, will report negative results. The senior author of the review notes that several studies carried out with his associates on fluoride pastes ended in contradiction (43 per cent reduction in one study and none in another). While studies using silver nitrate applications "produced" reductions as high as 90 or 100 per cent, what Bibby regards as the most carefully controlled study showed negative results.

J. M. Dunning, of the Harvard School of Dental Medicine, in an analysis of statistical methods of reporting dental decay comes to the conclusion that examining errors may be large ". . . easily exceeding a 100 per cent difference between samples" (J. Dent. Res. 29, 541, 1950). He emphasizes that mere statements of the reduction of caries by X per cent is not sufficient unless the DMF studies are subjected to close scrutiny as to the *validity* of the data and statistical significance tests are applied. The presentation of data in terms of teeth rather than individuals obscures important findings relative to individual reactions. To illustrate, an example is cited of the work of some Public Health Service investigators who report a 40-odd per cent benefit from topical fluoride treatments. But in the only one of their published reports which contain data on individuals, it is shown that some individuals developed *more* carious lesions on the *treated* teeth than on the untreated.

D. F. Radusch reports that eight dentists, all with years of clinical experience, considered to be careful investigators, examined thirty-three college women (J. Am. Dent. Ass. 28, 1959, 1941). Each subject was given independent, but consecutive examinations by each of three examiners under similar conditions. No time limit was set. The examiner had no knowledge of previous results but knew that his findings would be checked against those of the other two and consequently was especially careful. *The findings showed an extreme variability.* In one case the numbers reported by the three different examiners who examined the same mouth were six, eight, fourteen carious teeth, respectively. In one-fourth of the cases, the difference between the lowest and highest number of carious teeth was seven or eight. The *average* difference between the highest and lowest estimates of all cases was 4.2 carious teeth!

With particular reference to the fluoridation studies, artificial and natural, that purport to compare their findings to "normal" cities, we might cite the study of D. M. Hadjimarkos and his associates who found varying differences in the rate of decay in children from one part of Oregon to another part (Oral Surg., Oral Med., Oral Path., 3, 481, 1950). One region had a DMF rate of 13.3 per fourteen-year-old child compared to a rate of 7.5 for children of the same age in a different part of the state. There were similar geographic variations within the state for the fifteen-year-old and sixteen-year-old groups. Chemical analysis of the water supply showed no significant fluorine content in the regions studied, nor were there any significant changes in the water histories.

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[5] One explanation offered for the negative or low reductions is the particular acidulated fluoride solution used.

The most complete study, as an illustration of this point, was done by T. L. Hagan, a senior dental surgeon of the U.S. Public Health Service. He made a study of the dental caries prevalence of over 24,000 Georgia children in twelve different communities (Pub. Health Rep. 62, 1757, 1947). The report shows the wide variation of dental caries incidence in communities of the same geographical location. For the seven-year-old group the caries rate in terms of DMF per 100 children was 40, 50, 55, 62, 77, 85, 94, 99, 102, 167, 210, 244 for each of twelve communities, respectively. If we take the lowest number as the base rate then we can state that there were variations up to 610 per cent of the base rate from one community to another! For the nine-year-olds the DMF rate of one community was 747 per cent that of another community! For the eleven-year-olds the maximum variation was 625 per cent. For the fourteen-year-olds and for the sixteen-year-old children the maximum variation was 714 per cent and 754 per cent respectively, from one community to another.

Because of these considerations it is not unlikely to expect a large variation in the same community from year to year due to the intrinsic unreliability of dental statistics, change in the character of the population, examiners, and other conditions of the experiment.

* * *

The maximum permissible limit of fluoride concentration in the water supply established by the U.S. Public Health Service is 1.5 ppm. Most of the cities under fluoridation actually use a water supply adjusted to contain 1 to 1.2 ppm of fluorine, although Charlotte, North Carolina, adjusts its fluoride concentration from 0.60 ppm in July to 1.10 ppm during the winter months.[6] Florida has also established a seasonal variation. However, these attempts to compensate for increased water consumption during the summer months are not typical of most of the fluoridation projects.

Since mottling of teeth has been associated with the fluorine level of the water supply, it is of some concern whether fluoridation will harbor some risk in this regard. The proponents of fluoridation, at least in their public propaganda and statements (under oath) before Congressional Committees, have been quite clear and unhesitant to reassure us on the matter — no danger whatsoever. So, a Public Health Service Publication (No. 62, April, 1951) states:

> "At the concentration recommended for fluoridating community water supplies, there is no discoloration of the teeth. In fact, people who have consumed water containing the recommended amount of fluoride have unusually attractive teeth."

Dr. Bruce D. Forsyth, Assistant Surgeon General and Chief Dental Officer of the Public Health Service, has reassured the Food Committee (p. 1484), in 1952, that:

> "Careful epidemiological investigations demonstrated that as the fluoride

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[6] The levels used were fixed by comparing the variation in mean monthly air temperature and water usage of soft drink bottlers and bottled water sales. (AAAS-1954, p. 22.)

> concentration increases above 1 part per million, there is an increase in both the percentage of individuals afflicted and in the severity of the mottling. But these studies also showed that *a concentration below 1.5 parts of fluorine per million parts of water produced no mottling of esthetic consequence.*" (Emphasis added — M.K.)

His colleague, Dr. John W. Knutson, has given an even more unequivocal assurance to this congressional committee (p. 1497) in stating:

> "The point I want to make clear is that *if we get one objectionable case of mottled enamel in a community, even if it involved the examination of a thousand children, that would be too much fluoride.* Now the findings reported on a group basis would show that one out of a thousand got mottled enamel, only one individual, yet that result would be objectionable from a public health standpoint. I merely wanted to make that point clear." (Emphasis added — M.K.)

However, in order not to give the impression that we have deliberately fastened on to some perhaps over-zealous statements made by individuals not directly qualified in the field we must deal with the words of the expert *par excellence* — Doctor Henry Trendley Dean — who is introduced to the Food Committee as ". . . one of the leading authorities in the world on fluoridation of communal water supplies and the relation of fluorine to water". (Exactly what *relation* fluorine has *to* water is not made clear.) However, in his opening testimony Dr. Dean didn't give quite the impression of an "authority" — the exact results of the various fluoridation experiments were not precisely at his fingertips — he would have to look them up. He *thought* that the Newburgh, N.Y., experiment also included the (medical) study of older people. When informed that the report at hand only referred to pediatric examinations, the expert *par excellence* again replied that he "would have to look it up". Subsequently, he did not seem to be even quite sure of the exact results from his own Grand Rapids study.

Nonetheless the immediate concern is with Dr. Dean's statements on possible mottling (p. 1648 ff). The astute committee attorney, Kleinfeld, asks:

> "Is it your opinion that no objectionable fluorosis will result by using that (recommended) amount; is that right?
>
> *Dr. Dean:* None will develop at 1 part per million."

The questioning continues and the good doctor Dean is drawn out by Kleinfeld's question as to the meaning of *none* —

> ". . . what percentage do you feel should be ignored, if any, in determining whether mottling will be substantial enough to be considered?
>
> *Dr. Dean:* I would certainly ignore anything up to 15 per cent, when you understand how the 15 per cent is calculated. That may be a slightest little white fleck on a cusp of a back tooth. Maybe 2 out of 24, 25 teeth in the child. You can classify that as 'very mild' or throw that into 'negative'. If you want to be ultraconservative and call that slightest fleck fluorosis, you can go on a 15 per cent. Nobody sees it or knows it. (No correction of the grammar has been attempted, but this will be subsequently contrasted to Dean's published scientific work. — M.K.)
>
> *Mr. Kleinfeld:* Go up to 15 per cent; is that right?
>
> *Dr. Dean:* Yes. There is no brown stain or dull white opacity of the tooth.
>
> *Mr. Kleinfeld:* Does the 15 per cent include the category of 'questionable'?
>
> *Dr. Dean:* No."

The wonders of dental (disappearing?) algebra are indeed magnificent — in the hands of such a skilled mathematician, zero evolves into 15 per cent plus some (large) number called "Questionable" — a mathematical feat of first rank. However, in order that there be no possibility of misunderstanding the learned gentleman the reader's patience must be tried by more of these enlightening quotations.[7]

Continuing with his testimony, Dr. Dean, referring to his own work with 7,200 children, states: "You are not going to see any objectionable mottled enamel at one part per million". Subsequently when pressed further as to the exact type of mottling that might be expected, Dr. Dean states: "I would not expect any from the category of mild on up to severe." (The categories will be made explicit later.) When confronted with statements from his own work that seemed at variance with his testimony, Dean replied that the category was based on *"as few as two teeth"*. The committee attorney, Kleinfeld, asks:

> "Well, these two teeth could be front teeth, too, could they not?
>
> *Dr. Dean:* No, they would invariably be the second bicuspid or molar teeth, calcified at a later date."

Later the following discussion ensued (Food Committee, p. 1672 ff).

> "*Mr. Kleinfeld:* I have one last question, sir. Dr. Dean, I think this morning you testified that mild mottling did not occur on front teeth or was not noticeable on front teeth.
>
> *Dr. Dean:* It would be very rare.
>
> *Mr. Kleinfeld:* I have this booklet to which I referred this morning, Fluorine and Dental Health, which contains your article and contains pictures as part of your article. I just want to show it to you and ask whether under the category of 'mild' the picture which you have in your article shows mottling on the front teeth or not (showing picture).
>
> *Dr. Dean:* Yes sir, that is an extremely high value in the mild range.
>
> *Mr. Kleinfeld:* But this is labelled 'mild', is it not?
>
> *Dr. Dean:* Yes.
>
> *Mr. Kleinfeld:* And there is discernible mottling in the upper front two teeth; is that not right?
>
> *Dr. Dean:* Yes."

Following Dr. Dean was Dr. J. R. Doty, representing the American Dental Association. When asked as to the attitude of the American Dental Association toward the proposed fluoridation of the drinking water of Washington, Dr. Doty replied: "I believe it is their conviction that no children will suffer from any objectionable degree of the condition known as dental fluorosis" (Food Committee, p. 1682 ff). Attorney Kleinfeld then presented the pictures previously shown to Dr. Dean.

> "*Dr. Doty:* I should add, again, that I am not a dentist. No; personally I see nothing there which I, as an individual who am not expert in this field, would recognize as mottling.
>
> *Mr. Kleinfeld:* I would like to show that to the Committee, Mr. Chairman.
>
> *Dr. Doty:* I was looking under the one——
>
> *Mr. Kleinfeld:* I am talking about 'mild'.

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[7] Dean, in his testimony seems to give the impression that very few teeth are affected in those children designated as having fluorosed teeth. It is difficult, of course, to check this assertion without inspecting the actual records of the dental examinations. Dean indicates that in Aurora, 15 per cent of the *children* have either *very mild* or *mild* mottling. From an inspection of the chart given by E. R. Zimmerman (Pub. Health Rep. 69, 1115, 1954) and figures stated by Heyroth (Food Committee, p. 1787) it would seem that 5.1 per cent of the *total* permanent *teeth* of all children are affected. In the light of no other information, this would then seem to indicate that children with fluorosed teeth have on the average one-third of their entire dentition affected. However, a child must have at least two affected teeth to be placed in the appropriate category. If the number of children with only one affected tooth is large, this will of course lower the average number of teeth affected — but also would indicate that the actual number of affected children is larger than established by the criteria which excludes children with only one affected tooth.

Dr. Doty: Oh, I see. I am sorry; I was looking at the wrong picture. I see certain spots indicated on there which I would myself, I think, regard as such, as spots.

Mr. Kleinfeld: On what teeth do they appear, these spots?

Dr. Doty: They appear on several of the teeth.

Mr. Kleinfeld: Front teeth?

Dr. Doty: They seem to be; yes.

Mr. Kleinfeld: Is that what you have been referring to as unobjectionable?

Dr. Doty: It is my understanding that this is not representative of what is at the present time referred to as mild mottling.

Mr. Kleinfeld: Please answer the question.

Dr. Doty: I would say that I might find this effect objectionable, although I would definitely find it less objectionable than I would certain types of restorations resulting from dental decay in such teeth.

Mr. Kleinfeld: Let me ask you again. Your statement refers to certain types of dental fluorosis which you do not consider objectionable. Would you consider the type of dental fluorosis under the label 'mild' in the picture before you as objectionable or unobjectionable?

Mr. Conway (another witness): May I ask counsel a question?

Mr. Kleinfeld: Yes.

Mr. Conway: Are these actual photographs or artists' conceptions?

Mr. Kleinfeld: Dr. Dean is here. We will ask him. Are these actual photographs?

Dr. Dean: Actual photographs.

Mr. Kleinfeld: Now will you answer the question, Dr. Doty? If you cannot, we will go on from there.

Dr. Doty: As I have said, I am not a dentist.

Mr. Kleinfeld: You represent the American Dental Association, do you not?

Dr. Doty: I represent the American Dental Association in an administrative capacity.

Mr. Kleinfeld: All right. Please return the pictures."

The cited experience seems to have left little impression on the consciousness (unconsciousness?) of either Drs. Dean or Doty. For, two years later, in their testimony before the Commerce Committee (p. 274), Dr. Dean (referring to the above cited publication) was to say: "It was also demonstrated quantitatively that under average water consumption and climatological conditions in the United States a concentration of 1.0 part per million in the drinking water was not associated with the development of mottled enamel". Dr. Doty was not running far behind with his statement (p. 293) to the same committee that: "Objectionable mottling of the teeth does not occur with controlled fluoridation . . . but noticeable mottling occurs when the fluoride content of water is *several times* the concentrations required for dental benefits." (Emphasis added — M.K.)

The National Research Council reports that: "The margin between the optimal quantity of fluoride in drinking water that is required for maximal benefit in tooth development and the amount that produces undesirable physiological effects is sufficiently wide to be of no concern" (Commerce Committee, p. 464). They follow this with the (*non-sequitur*) statement that beginning at 2 ppm F, an increasing proportion of children have mottled enamel that is easily apparent but at 1 ppm "less than 10 per cent" (modified to "not more than 10 to 15 per cent" a paragraph later) shows the least detectable (mildest detectable) mottled enamel. However, Doctor Dean, the man whose work is used for the basis of the above statement, when asked in the hearings before the Commerce Committee (p. 282 ff) — "Where do you pass the danger line? Is five parts per million too much?"

> "*Dr. Dean:* I would say a lot lower than that. I would say 1½ should not be exceeded. At 1.8 you start picking up a little too much of this white opacity.
>
> *Mr. Hale:* You should never get beyond 1.8?
>
> *Dr. Dean:* I would not go that high. I think one is ample.
>
> *Mr. Hale:* One is ample?
>
> *Dr. Dean:* One is pretty close to the right amount under average conditions.
>
> *Mr. Hale:* If you go above one you run into a risk factor?
>
> *Dr. Dean: Maybe* it is possible if you get into a place like North Dakota or South Dakota or eastern Montana it *might* go up to 1.4 or 1.5 which *might* work like 1 around Chicago, or six-tenths in the South-East states. Dr. Galagan of the Public Health Service has recently done extensive work on the influence of mean average temperatures and climatological factors on this condition. (Emphasis is added and reflects the *true* state of knowledge in this respect. — M.K.)
>
> *Mr. Hale:* You would readily agree when artificial fluoridation is done it has to be done with extreme care and accuracy?
>
> *Dr. Dean:* There is no doubt about that."

At another point in the Hearings before the Commerce Committee (p. 301), referring to the possibility of mottling, Dr. Doty supplied the following succulent remark: "There is quite a margin of safety, but still it must be kept within fairly narrow limits."

Of particular interest is the letter which Dr. H. C. Hodge, Professor of Pharmacology and Toxicology at the University of Rochester, wrote to the Commerce Committee (p. 472). In his letter Dr. Hodge states:

> "On the basis of the available evidence from human studies a two-fold factor of safety exists between levels of fluorides producing detectable mottled enamel even in a few individuals and a level of 1 part per million. *Although the margin of safety for mild mottling is only twofold, this safety factor is established firmly.*" (Emphasis added — M.K.)

Yet Dr. Hodge, co-author of a chapter in that volume of "high caliber" — "Fluoridation as a Public Health Measure" (AAAS-1954, p. 88), there writes:

> "On the basis of the available evidence from human studies, a twofold factor of safety exists between levels of fluoride producing enamel hypoplasia and a level of 1 ppm.
>
> *A major question remaining unanswered is whether the severity of enamel mottling will be the same in communities where water fluoridation is in progress as in communities where the water naturally contains fluoride.*" (Emphasis added — M.K.)

However, some pages later is found the *non-sequitur:*

> "Only a twofold factor of safety exists in the case of mottled enamel — yet this response in large groups of children has been so mathematically related to dosage that the prediction can be made with confidence that *unesthetic mottling* will not be seen." (Emphasis added — M.K.)

which seems to leave us where we were before. However in their summary:

> "In the case of mottled enamel, the factor of safety is not large, but it is sufficiently great to permit a confident prediction that *severe mottling* in the form of stained teeth with grooved and pitted surfaces will not be seen." (Emphasis added — M.K.)

The professors have lost us somewhere along the way — aside from the obvious inconsistency of their statements — it seemed all along that they were talking about the *milder* forms of mottling, an objectionable enough condition in itself.

In order to consider the actual incidence of mottling prevalent in fluorine areas, it is illuminating to cite Dean's classifications (AAAS-1942, p. 23 ff):

"*Questionable:* The enamel discloses slight aberrations from the translucency of normal enamel, ranging from a few white flecks to occasional white spots.

> This classification is utilized in those instances where a definite diagnosis of the mildest form of fluorosis is not warranted and a classification of 'normal' not justified.
>
> *Very mild:* Small, opaque, paper white areas scattered irregularly over the tooth but not involving as much as approximately 25 per cent of the tooth surface. Frequently included in this classification are teeth showing no more than about 1-2 mm of white opacity at the tip of the summit of the cusps of the bicuspids or second molars.
>
> *Mild:* The white opaque areas in the enamel of the teeth are more extensive but do not involve as much as 50 per cent of the tooth.
>
> *Moderate:* All enamel surfaces of the teeth are affected, and surfaces subject to attrition show marked wear. Brown stain is frequently a disfiguring feature.
>
> *Severe:* Includes teeth formerly classified as 'moderately severe' and 'severe'. All enamel surfaces are affected and hypoplasia is so marked that the general form of the tooth may be affected. The major diagnostic sign of this classification is the discrete or confluent pitting. Brown stains are widespread and teeth often present a corroded-like appearance."

The child is not put into the highest category unless he has *at least* two or more teeth affected in that category. It should be clearly understood that the category *questionable* is not that — that is QUESTIONABLE. It represents a definite abnormality of the enamel surface. Dean, himself, recognizes this by giving the *questionable* category a statistical weight equal to one-half that assigned to *very mild.* It should be noted, in addition, that if *everyone* examined were classified as *questionable,* the community "fluorosis index" would be large enough to be considered of concern even from the point of view of the statistical "standards" set by the Public Health Service. Despite the comparative precision of these definitions, in assessing reports it is necessary to bear in mind that investigators may use Dean's early criteria for *questionable* which characterizes front teeth as having thin, irregular opaque streaks or flecks on their surfaces while posterior teeth display opacities, two or three millimeters in extent, on the tips of their cusps (Pub. Health Rep. 50, 424, 1935 as cited by E. R. Zimmerman, Pub. Health Rep. 69, 1115, 1954). This is similar to the *very mild* classification which Dean adopted later. While most investigators (Dean included) tend to ignore the *questionable* category when speaking of the incidence of fluorosis, Zimmerman (*op. cit.*) in a recent report, frankly considers the *questionable* category as fluorosis. Although he uses Dean's earlier classification, it is not at all clear exactly what standards other investigators used (or Dean too?) in different reports.

However, leaving qualifying considerations aside for the moment, some of the actual incidence of mottling may be cited for areas with trace amounts of indigenous fluorine in the water supply. For Marion, Ohio, with a listed fluorine content of 0.4 ppm, Dean reports (AAAS-1942) that of 263 children, twelve to fourteen-year-old, 36.5 per cent were *questionable,* 5.3 per cent were *very mild,* 0.8 per cent were *mild.*[8] In Elgin, Illinois, with a listed fluorine content of 0.5 ppm F,[9] Dean reports that 35.3 per cent of the children had *questionably* fluorosed teeth, 3.5 per cent had *very mild*, 0.7 per cent had *mild*. In Pueblo, Colorado (F content 0.6 ppm) 21.2 per cent were *questionable*, 6.2 per cent were *very mild* and 0.3 per cent were *mild*. In Kewanee, Illinois (F content 0.9 ppm) 35 per cent were *questionable*, 10.6 per cent were *very mild* and 1.6 per cent were *mild*. Aurora, Illinois, is the city used as the "ideal" city in Dean's Grand Rapids study.[10] It has a listed fluorine content of 1.2 ppm F in its water supply.[11] Dr. J. Roy Doty (our old friend) has testified before the Food Committee (p. 1676) that: *"Furthermore, objectionable dental fluorosis in Aurora and Joliet is almost unheard of."* However, Dean finds that in Aurora 31.8 per cent of the children have *questionably* fluorosed teeth, 13.9 per cent are *very mild* and 1.1 per cent are *mild*! In Joliet, Illinois, which Dean reports as having 1.3 ppm F in the water supply, he finds that 34.2 per cent are *questionable*, 22.2 per cent are *very mild* and 3.1 per cent are *mild*! Another source cites Joliet as having a few children per thousand with *moderate* mottling (AAAS-1954, p. 90).[12]

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[8] In his testimony before the Food Committee, Dean attempted to undermine his own damaging figures by claiming that some of the children were exposed to a water supply containing 1.2 ppm F during the first "couple of years" of the older children's lifetime. But in a 1946 publication (AAAS-1946) he states that the older segment of the sample for Marion *may* have used 1.1 ppm F water for a year or two.

[9] A later analysis by F. J. McClure gives 0.7 ppm F for Elgin (Pub. Health Rep. 59, 1543, 1944).

A pause for breath. In Aurora — the *model* city — only 53.2 per cent of the children examined had teeth that were not fluorosed. In Joliet, with only one-tenth more fluorine on a part-per-million basis, only 40.5 per cent of the children had non-fluorosed teeth, yet the "experts" appear before Congressional Committees to claim that *no* mottling can be expected to occur in the artificial fluoridation program.

To continue just a bit further with the painful list: for Maywood, Illinois, with only 1.2 ppm F, Dean reports that 27.5 per cent of the children fell into the *questionable* category, 29.2 per cent into the *very mild* and 4.1 per cent were *mild*. For East Moline, Illinois, also with 1.2 ppm F (the recommended amount), Dean found that 31.6 per cent of the children had *questionably* fluorosed teeth, 29.6 per cent were *very mild*, 2 per cent were *mild* (AAAS-1946). He adds a footnote — very encouraging — that "presumptive and direct evidence" exists that these water supplies contained 1.5 ppm F a few years before the samples were taken for this study.

As an indication of the very rapid increase in the severity of mottling at higher levels of fluorine, we can cite Galesburg, Illinois, which Dean reports as having 1.9 ppm F in the (AAAS) 1942 publication but which he lists as 1.8 ppm F in 1944.[13] There 40.3 per cent of the children have *very mild* mottling, with 6.2 per cent classified as *mild* and 1.1 per cent as *moderate*. Clovis, New Mexico, where a much younger age group was examined (nine to eleven years of age as compared to the twelve to fourteen-year-old group cited previously), Dean found that in this town which had 2.2 ppm F that 16 per cent of the children were in the *questionable* category, 23.9 per cent were *very mild*, 35.4 per cent were *mild*, 11.0 per cent were *moderate* and 0.7 per cent were *severe*. In this same paper, Dean acknowledges that the children of younger ages — such as nine years old — show a lower incidence of mottling than a sampling of older age groups since many of their permanent teeth have not yet erupted.

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[10] The National Research Council (Commerce Committee, p. 465) reports that: "In the 5-6- and 7-year old groups at Grand Rapids, the decayed-*mottled*-filled rates now approximate those of comparable groups of children in Aurora." (Emphasis added — M.K.) Whether this is an "unconscious" slip or an estimate of the true situation is unknown to us as the mottling figures for Grand Rapids are not publicly available (to this writer's knowledge).

[11] One investigator in 1943 found that the Aurora water contained only 1.0 ppm of fluorine while another investigator, in the same year, found a fluorine content of 0.9 ppm (as cited in F. J. McClure, Pub. Health Rep. 59, 1543, 1944).

[12] The mottling figures given by this reference for Elgin and Joliet differ slightly from Dean's 1942 figures.

[13] Dean, H. T., in *Fluorine in Dental Public Health*, N.Y. Inst. of Clinical Oral Path., N.Y.C., 1944.

At Amarillo, Texas, with 3.9 ppm F (cited as perhaps 4.2 ppm at some time), for a young group of children, Dean lists 6.6 per cent as *questionable*, 15.2 per cent as *very mild*, 28 per cent as *mild*, 33.9 per cent as *moderate* and 13.2 per cent as *severe*. Only 3.1 per cent had normal teeth. In Post, Texas, with 5.7 ppm F, 89.5 per cent of the children in the fourth to sixth grades of school had either *moderate* or *severe* mottling.[14]

E. R. Zimmerman, also associated with the Public Health Service, has done a more recent study on the "model" city, Aurora (Pub. Health Rep. 69, 1115, 1954). He used Dean's 1935 criteria for *questionably* fluorosed teeth — which seems to be a more severe classification than that cited by Dean in 1942. He used areas in Maryland with negligible fluorine for comparison. The number of teeth present in the Aurora and Maryland children were compared and the small difference was found to be due to chance variation — an unusual finding in view of the general fluoridation thesis that claims less missing teeth for fluorine areas. The dental caries experience and "community fluorosis index" were similar to Dean's results (for this the ambiguity in the criteria mentioned previously had relevance). He found that 26 per cent of the children were in his *questionable* category, 15 per cent were *very mild* and 2 per cent were *mild*. An additional 9 per cent had tooth opacities which he characterized as non-fluoride. From the chart presented in Zimmerman's paper, it can be seen that the non-fluoride opacities found in the Maryland children affected only one or two teeth per child which (to judge from the accompanying artist's sketch) consisted of one round white spot on the anterior tooth and two white spots on the cusp of the posterior tooth shown. However the largest category of Aurora children with *questionably* fluorosed teeth had three or more affected teeth per dentition. Children who had thirteen or more fluorosed teeth per dentition were almost as numerous as those who had only one or two affected teeth. Those who had five or more affected teeth constituted a larger percentage than those who had less than five teeth affected. From the artist's sketch, the questionable fluorosed lesions appear as two longitudinal striations transversing completely the anterior tooth shown and six irregularly shaped opacities on the cusp of the posterior tooth shown.

Zimmerman does not indicate which teeth in the dentition were affected by *very mild* or *mild* fluorosis. However, he does present a chart for the distribution of *questionable* fluorosis opacities on a tooth unit basis by tooth type. The posterior teeth (the premolars and molars) form a large majority of those teeth in the questionable fluorosis category although the percentage affected among the incisors and canine teeth is not at all insignificant — particularly in view of the large number of affected teeth per dentition.

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[14] The number of children examined in the above cities were: Elgin 403; Pueblo 614; Kewanee 123; Aurora 633; Joliet 447; Maywood 171; East Moline 152; Galesburg 273; Clovis 138; Amarillo 289; Post 38.

Scanning Dean's earlier work on mottling does not leave one with the impression that mottling and apparent fluorine content of the water supply is strictly correlated. In Muleshoe, Texas, he found that of twenty-five children examined fifteen had mottling ranging from *mild* to *moderately severe* (Pub. Health Rep. 50, 424, 1935). The fluorine content in this town is given at 1.5 ppm F by one source (as cited in F. J. McClure, Pub. Health Rep. 59, 1543, 1944). In Dalhart, Texas, which is found to have a fluorine content of 1.2 ppm F in 1939 but only 0.6 ppm F some years later (*op. cit.*), Dean found that of the seventy children examined twenty-seven were in the *very mild* and fifteen in the *mild* categories (Dean, *op. cit.*). But in Big Spring, Texas, where the monthly fluorine determinations ranged from 0.3 to 1.1 ppm (Am. J. Pub. Health 26, 567, 1936) he found only two children out of sixty-eight with *very mild* mottling and none in the severer categories. In Mullins, South Carolina, with a mean F content of 0.9 ppm, Dean reports that 21.3 per cent were *questionable,* 8.5 per cent were *very mild* and 2.1 per cent were *mild* of the forty-seven young children examined (Pub. Health Rep. 52, 1249, 1937). In Aberdeen, South Dakota, listed at 1.7 ppm F, Dean found that only 22 per cent of 166 children examined had fluorosed teeth in the *very mild* to *moderate* category (Pub. Health Rep. 54, 212, 1939). In 1946 Dean examined 110 children in Moultrie, Georgia (0.7 ppm F) and 100 children in Brunswick, Georgia (0.5 ppm F). "The incidence of dental fluorosis practically all of the mildest type was 12.6 and 9 per cent respectively." (J. Am. Water Works Ass. 43, 17, 1951). In 1939 Dean lists Galesburg, Illinois, as containing 1.8 ppm F and finds that 33.8 per cent of the children could be classified as *very mild,* 11.9 per cent as *mild* and 1.2 per cent as *moderate* (figures different from those cited previously from the 1942 study). However, Monmouth, Illinois, with one-tenth less average fluorine on a part per million basis, is characterized as having 47.5 per cent of its children in the *very mild* category and 20.2 per cent as *mild* (Pub. Health Rep. 54, 862, 1939). A single sample taken later showed 1.9 ppm for Galesburg and 1.6 ppm for Monmouth. It is an entirely open question as to whether these anomalies are to be explained by unreliable fluoride analyses, uncertain water histories, climatic variation, different sampling sizes and different ages of the children examined, examiner error or just as demonstrating that no simple mottling to fluorine relationship exists (as claimed).

It is worthy for the subject to cite the work of other investigators. For reasons of space those cases particularly are cited which indicate extremely high mottling. C. F. Deatherage, examining eighty-two young children in Geneva, Illinois, found that 31.8 per cent suffered from *very mild* mottling (AAAS-1942, p. 81 ff). The listed fluorine content was only 1.0 ppm. In other cities examined, he found that there was not a simple correlation between the fluorine content of the water supply and the rate of dental fluorosis.

M. C. Smith and H. V. Smith, noted for their discovery that fluorides were responsible for mottling, consider that water with a fluoride content of 0.9 ppm or over is dangerous from the standpoint of probable damage to the teeth.[15] Their observations are drawn from their experience with children in Arizona where the mean temperature is much higher than some of the other localities previously considered. While perhaps the large rate of mottling observed *may* be explained by increased water intake, this would not seem to be the only factor. For instance, they too found that the F-content of water and the caries rate could not be simply related in all cases (Food Committee, p. 1616 ff).

They esablished that in one part of Tucson, where the drinking water contained 0.9 ppm F, 37 per cent of the children had mottled enamel varying in degree from *very mild* to *moderate*. Indian children, drinking water containing only 1.0 ppm F, showed no lower rate of dental caries incidence than other children ingesting much less fluorine. However, ". . . the teeth of almost 100 per cent of these children were marred beyond repair". In Florence (Arizona), 94 per cent of the school children drinking water containing 1.3 ppm F had mottled teeth in varying degrees of severity. In Casa Grande (less than 1.0 ppm F) almost half the children had mottled teeth.

D. J. Galagan, who thinks that the high mottling rate found in Arizona may be due to increased water consumption, also examined children in this state (Pub. Health Rep. 68, 497, 1953). For Casa Grande he found that 38 per cent of the children were *questionable,* 30 per cent were *very mild* and 18 per cent *mild* — figures which agree with Smith. However for Florence which he lists at 1.2 ppm F, he found that 20 per cent of the children had *questionably* mottled teeth, 26 per cent were *very mild*, 14 per cent were *mild,* 13 per cent were *moderate* and 3 per cent were *severe*. Both the fluorine content and the total mottling figures for this city are lower than those given by Professor Smith. His figures for Tucson, both in fluorine content and mottling, are much lower than those given by Smith. This may be due to the fact that parts of the city have different sources of water supply of radically different fluorine content. Galagan also follows the prevalent style of not considering *questionable* in the "affected" category. M. Massler and I. Schour also found extremely high rates of mottling in two Italian communities (J. Am. Dent. Ass. 44, 156, 1952). Since the water intake of the Italian children was much lower than American children they could only hypothesize that the affliction was aggravated by the poor nutritional status. For the town with a water fluoride content of 3.5 ppm, they found that 64.4 per cent of the fifteen to twenty-year-old group had *moderate* mottling. Also 66.7 per cent of the fifty-one to sixty-year-old group had *moderately severe* mottling and about 3 per cent of those over thirty-one years of age had *severe* mottling. In the town with a water supply contaminated with only 1.3 ppm fluorine, 45.8 per cent of the fifteen to twenty-year-old group had *moderate* mottling. They also noted that the incidence of mottled teeth increased sharply with age.

In an area of India where the fluorine content varied from 1 to 3 ppm for most sources of water (maximum content of a small number of sources never exceeded 6 ppm) there was an incidence of 50 per cent to 90 per cent of children with mottled enamel. There was an incidence of 70 per cent mottled enamel in children living in a district whose waters showed fluorides varying from 0.6 to 2 ppm. The examination was conducted during a period of famine. In Podili, with wells containing 0.6, 1.2 and 3-5 ppm fluorides, respectively, the incidence of mottling was 74 per cent (31 per cent was *severe*) (Pandit, C. G., *et. al.,* Indian J. Med. Res. 28, 533, 1940).

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[15] Smith, H. V. and M. C., U. of Arizona Reprint W-43, 1945; Smith, H. V., Am. J. Pub. Health 25, 434, 1935; Smith, M. C., Food Committee, p. 1604.

British investigators have found that dental fluorosis is common in Oxfordshire villages where the water has a content of about 1 ppm fluorine (Kemp, F. H., *et al.,* Brit. J. Soc. Med. 2, 66, 1948). They also found cases of *severe* dental fluorosis among adults permanently resident in areas whose wells contained 0.3 to 0.9 ppm F. The same condition was found for some children drinking water from wells containing 0.3 to 1.2 ppm F. In one village, where the water supply contains only 0.8 ppm F, they found that *severe* dental fluorosis is common (Kemp, F. H., *et al., The Lancet,* 2, 93, 1942). The condition was associated with poor nutrition.

In reviewing the results of the American investigators, it must be stressed that investigations included only young children. That the severity and incidence of mottling increases with age has been emphasized in the work of Massler and Schour (*op. cit.*). Even Dean (AAAS-1942) has indicated that younger children show less mottling than groups of older age and that the prevalence of brown staining increases with age (International Dent. J. 4, 311, 1954). Therefore the incidence of mottling quoted for young children, in all probability are underestimates of the situation prevailing for adults. Probative to this underestimation is the procedure of not allowing a higher grade of mottling unless at least two teeth are so affected.

Dean and also other observers have noticed that in high fluoride areas (more than 4 ppm F) there is an apparent increased incidence of gingivitis (J. Am. Med. Ass. 107, 1269, 1936; J. Am. Dent. Ass. 30, 1278, 1943). Investigators in India have also found that pyorrhoea is associated with fluorosis (Shortt, H. E., Indian J. Med. Res. 25, 553, 1937). The blessings of fluorine are indeed multitudinous.

* * *

The claim that fluorine benefits the teeth of adults is usually based on only one study done by A. L. Russell and E. Elvove (Pub. Health Rep. 66, 1389, 1951). They carried out an examination of Colorado Springs, Colorado, whose water supply had a seasonal fluoride content ranging from 1.8 ppm F to 3.0 ppm F (mean level of 2.5 ppm). They did not consider deep pits or fissures carious in absence of other indications of caries. Using this criteria, they found that the DMF rate in Colorado Springs, in the twenty to forty-four-year-old groups was 60 per cent lower than Boulder (Colorado) which had no fluoride. However, of the 385 persons examined in Colorado Springs, 322 had dental fluorosis varying from *very mild* to *severe*. In addition, although the rate of third molar loss was the same for the two cities, those at Boulder were caused by decay while at Colorado Springs most of the loss was due to malposition, usually understood to be the consequence of severe fluorosis. — Who once said that a sure cure for a headache was the guillotine?

In view of the complete lack, aside from this lone investigation, of adequate dental studies on adults in communities which contain the "optimum" amount of fluoride, it is not at all clear whether the apparent caries reduction effect of fluorine, in certain cases, is a permanent one or merely plays the role of postponing decay to a later date and perhaps greater incidence.

* * *

Little work, other than that by Dean and his associates, has been done independently on the relation of tooth decay to fluorine ingestion by humans. Nonetheless some of these independent findings are worth recording. H. Klein who studied 1,600 children residing in a New Jersey fluoride area found that the molars which are the most frequently attacked by caries, are protected the least by fluorides (Pub. Health Rep. 63, 563, 1948). Concretely, caries attack was reduced only about a third of "normal" expectation in the lower molar teeth. Although this would be a significant reduction, most of the treatment problem for molar caries still remains — a phenomenon which perhaps explains why the practising dentists in that area, prior to Klein's study, did not consider that the teeth of their patients were uniquely different from those of children in other areas.

A. L. Russell has examined 339 South Dakota children accidently exposed for a year and a half to waters containing 1.15 ppm fluorine during a period prior to the eruption of their first permanent molars (J. Dent. Res. 28, 298, 1949). Although about 10 per cent of the girls and 5 per cent of the boys showed *very mild* or *mild* dental fluorosis, he could not demonstrate any caries-inhibitory effect whatsoever. J. D. Boyd and V. D. Cheyne, who examined children in Iowa, found that although the average incidence of dental caries was lessened in areas of endemic fluorosis, their quantitative results differed sharply from other studies. They found caries of some degree in almost every subject and, to boot, a high incidence of caries in many children with mottled enamel and prolonged fluoride ingestion. They concluded that despite some diminution of caries, fluoride ingestion has not prevented significant caries incidence in their subjects (J. Dent. Res. 25, 162, 1946; J. Pediatrics 29, 286, 1946). That the caries rate varies in children with mottled teeth has already been noted by H. V. Smith (Food Committee, p. 1616 ff).

Experience with animals has shown that excessive fluorine softens teeth, instead of hardening them, resulting in serious abrasion (Food Committee, p. 1573). The Smiths, in their extensive observations of children with mottled teeth, have noticed that frequently the enamel may be badly pitted or corroded, the enamel tending to chip off. Fillings made in such teeth do not hold well (U. of Arizona Tech. Bull. No. 32, 1937). In 1935 the Tucson (Arizona Dental Association was quoted as estimating that the dental care of teeth of the average person with mottled enamel would cost one thousand dollars up to adulthood. At this time the teeth must usually be replaced by false ones (cited by Smith, M. C., Am. J. Pub. Health 25, 696, 1935). The Smiths, in considering the proposed use of fluorides for the reduction of dental caries, in 1940 write:

> *"To one who is familiar with the disfiguring dental defect known as mottled enamel which affects the teeth of every person who drinks water containing as little as 1 ppm of fluorine during the years of tooth forma-*

> *tion, this recommendation seems, to put it mildly, unsafe. There is ample evidence that mottled teeth, though they be somewhat more resistant to the onset of decay, are structurally weak, and that unfortunately when decay does set in, the result is often disastrous."*
> (Am. J. Pub. Health 30, 1050, 1940.)

In St. David (Arizona) which has a high fluorine content[16] the Smiths found that while only 33 per cent of the twelve to fourteen-year-old children showed any carious lesions, the percentage increased with age so that there were few individuals over twenty-one years of age without caries. Steps taken to repair cavities in many cases were unsuccessful, the tooth breaking away when attempts were made to anchor fillings. Extraction was the only course. Startling was the fact that: *"Fifty per cent of all individuals over twenty-four years of age had lost all of their teeth and are now wearing plates."* (AAAS-1942, p. 12 ff.)

* * *

By now perhaps the reader may have some slight apprehension as to the desirability of the fluoridation program. With which the writer could well break off here — there is no need to flay a dead horse. However, there are certain dead horses who make a living parading as though alive, kicking their heels and presenting a fine "scientific" show. Therefore, in order thoroughly to dispense with the live carcasses so that even the dead horses know they are dead, really dead, there must be displayed all the appurtenances of *Hochgelehrsamkeit*. In order not to leave open the charge of ignoring relevant topics there must be secured a certain measure of completeness. Hence the writer is compelled to wade still further into this distasteful morass.

Since most inorganic fluorides are extremely toxic, the question has arisen as to whether any other detrimental physiological effects, aside from mottling, would be expected to occur in those areas artificially fluoridated. The proponents of fluoridation have attempted to answer this question, in part, by referring to mortality "statistics" which "show" that there is nothing unusual in the mortality rates of that part of the population living in areas where the water supply contains "natural" fluorides. Leaving for the moment the question of the validity of these "statistics" and also the question of the "naturalness" of the fluorides found in areas of endemic dental fluorosis, consider only the question raised by the opponents of fluoridation as to whether the same physiological effects are to be expected from the addition of artificial fluorides[17] as are evidenced from natural fluorides.

To answer this question the Public Health Service has marshalled together a long string of men of "high caliber" to testify that all fluorides are the same. That is: (to use their peculiar terminology) one fluoride ion equals any other fluoride ion. *A equals A.*

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[16] The fluorine content of the different sources of water in St. David is reported to vary from 1.6 to 7.15 ppm F. (U. of Arizona Tech. Bull. No. 32, 1937; Am. J. Pub. Health 30, 1050, 1940.)

[17] Some of the fluorides available for use or in use in the fluoridation programs are sodium fluoride, sodium fluosilicate, ammonium silicofluoride, hydrofluosilic acid and hydrofluoric acid.

A. P. Black, Chairman of the Department of Chemistry of the University of Florida, representing himself as an expert in water fluoride chemistry, writes to the Commerce Committee (p. 461):

> "In the case of naturally present fluorides in water and in the case of fluorides added to water, these ions are identical, and it is not logical to suppose that the same ions in water would produce different effects depending whether they were naturally present or have been added."

W. L. Harris, Water Superintendent at Grand Rapids, states (Commerce Committee, p. 331):

> "In any case, the nature of the fluoride ion itself is not changed by its separation from the natural condition in which it existed in the ground and, therefore, it can have no effect other than that which it would impart naturally."

The St. Louis Medical Society declares to this same committee (p. 338):

> "From chemical theory, however, and from *all* observed facts of its behavior, the inference is plain that the soluble fluoride ions are equally effective at a given concentration, however introduced." (Emphasis added — M.K.)

At another point they state (p. 343):

> "No distinction is to be made between the effects on the human body of fluoride ion naturally occurring in a water supply and the same concentration of fluoride attained by either supplementation or defluoridation."

Dr. J. R. Doty, of the American Dental Association, is right there batting away with the rest (p. 290):

> "The chemist, therefore, is led to the inescapable conclusion that fluoride ions are identical whether they are derived from calcium fluoride, sodium fluoride, or some other salt which dissociates to form fluoride ions in water solution. Biological observations give added confirmation to this concept, which is so fundamental to our considerations that the association has asked that statements be sent to your committee by other chemists whose competence is recognized throughout the chemical profession."

Dr. John W. Knutson, Chief Dental Officer of the Public Health Service, testifies that (p. 367):

> "Another important point is that the dissolved particles of fluoride in a water supply are identical whether they come from fluoride-bearing soil, subterranean rock, or from a fluoride compound added mechanically in a water plant. *All fluoride ions, regardless of source, are the same chemically, and in their physiological action.* This is a basic and elementary fact which has been demonstrated in the laboratory and in studies on both animals and humans." (Emphasis added — M.K.)

All of the above citations confine themselves to or imply the physiological identity of *fluoride compounds* in a water solution. (The use of the term "ion" was irrelevant to the real issue.) A reading of the complete testimony before the two Congressional Committees leaves the impression that most of the relevant testimony in favor of fluoridation tended to convey that even fluorides present in food are to be oonsidered as identical in their actions. If this was not stated explicitly at times it certainly was inherent in the argument that foods normally contain a certain amount of fluorides and that therefore this is not an element foreign to our diet.[18] This impression was further fostered by testimony which enumerated the fluorine content of foods without mentioning the different physiological actions of complex fluorides.[19] In fact, when Dr. Arnold, one of the authors of the Bartlett-Cameron study, which "proved" the safety of high fluoride ingestion (examined subsequently), appeared before the Food Committee (p. 1632), Representative (Dr.) Miller asked:

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[18] e.g. see the testimony of Dr. Knutson before the Food Committee, p. 1503; also that of Dr. Doty before the Commerce Committee, p. 290.

[19] e.g. see the testimony of Drs. Knutson and Zipkin before the Commerce Committee, p. 367 ff.

> "In your opinion, if you had fluorides in your food, would you get about the same result as if you had them in your drinking water?
> *Dr. Arnold:* In my opinion, yes sir, there is no difference between them."

It is not to be implied that the above views were unanimous. However, they are honestly representative of the vast majority of the testimony. An exception to this was the testimony of Dr. Blaney, director of the Evanston, Illinois, caries study, who, while not hesitant to assure the Food Committee (p. 1541) that the addition of fluorine to water (at 1 ppm) is not introducing a new element into our diet, just didn't know if there was any difference in the solubility of food fluorides and sodium fluoride. There were also one or two remarks by others that seem to raise doubts as to whether or not fluorides put into milk would be effective. At least Dr. Ast, the director of the Newburgh-Kingston study, was aware of the fact that different fluoride compounds may have different physiological effects (Food Committee, p. 1748).

It would be premature at this point to demonstrate theoretically why the assertion, "All fluoride ions, regardless of source, are the same chemically, and in their physiological action", is a meaningless assertion with the same emptiness of content as implied in the statement *A equals A*. What can be done, in a concrete manner, is to establish in the paragraphs immediately following and in those concerned with the question of excretion and bodily storage of fluorine, that most of the relevant available scientific reports clearly indicate that the effect of different fluoride compounds, *even in weak solutions,* cannot be considered as physiologically identical. In fact sufficient evidence exists to show the *striking* dissimilarity of some fluoride compounds. It would be useless, in the given scientific framework, to speculate as to the reasons involved in these different physiological effects, i.e. to enter into considerations of the possibility of synergistic effects with other elements ingested or in the body fluids, relative solubility, possible different forms of ionic dissociation or bonding, or other purely *chemical* explanations. On the basis of present scientific knowledge (in contradistinction to philosophic considerations) the matter can only be settled by considering the actual physiological effects as defined by animal or human experiments. Even in those experiments which imply a physiological similarity between certain definite compounds it must be remembered that the available evidence is derived from a few experiments on *rats* and still fewer or no experiments on humans. It is therefore the height of public irresponsibility to advocate or permit the use of particular types of fluoride compounds solely for reasons of economy or engineering feasibility.

Muhler, Nebergall, and Day have shown that some compounds reduce the incidence of decay in rats much more than sodium fluoride, yet the amount of fluorine deposited in the femurs is only one-third to one-half as much. Experiments performed by Muhler and Day indicated that tin fluoride administered to rats in their drinking water at a level of 2 ppm F, was much more effective than sodium fluoride at a level of 10 ppm F, in reducing the incidence of decay in the teeth of these rats. The same men have also found that hydrofluoric acid is less effective than sodium fluoride, at similar concentrations, in reducing rat caries.[20]

Shourie, Hein, and Hodge allowed hamsters to ingest water containing 40 ppm of fluorine; in one case a solution of sodium fluoride was used and in the other group the solution was of sodium monofluorophosphate (Na_2PO_3F). Both fluoride compounds appeared markedly to decrease the incidence of decay in the teeth of the hamsters. The relative effectiveness could not be compared due to the high level of fluorides used. However, when lethal doses of these compounds were administered orally or by intraperitoneal injection it was found that, on the basis of fluorine content, the sodium monofluorophosphate was 2.5 to 3 times less toxic than sodium fluoride (J. Dent. Res. 29, 529, 1950).

J. W. Hein and his associates found that the acute toxicity of various fluorides (by intraperitoneal injection to hamsters) as compared to sodium fluoride, on a fluoride content basis was: Na_3AlF_6, 0.007 as toxic; Flural (Al, F, SO_4), 0.6 to 0.5 as toxic; KPF_6, 0.1 as toxic; Na_2PO_3F, 0.4 to 0.3 as toxic. When hamsters drank solutions of these compounds at levels of about 20 ppm F a nearly maximal reduction of caries was obtained. The striking exception was potassium perfluorophosphate (KPF_6) which did not reduce the caries rate even when ingested at levels as high as 114 ppm F (J. Dent. Res. 30, 466, 1951).

P. H. Keyes and K. L. Shourie found that, when fluorides were administered at 50 ppm levels in food, sodium fluosilicate was less effective and calcium fluoride was ineffective compared to sodium fluoride in reducing the caries rate of hamsters (J. Dent. Res. 28, 138, 1949).

I. Zipkin and F. J. McClure fed rats water containing various fluorides at levels of 50 ppm. They report that sodium fluoride, sodium monofluorophosphate, and sodium fluosilicate had similar effects in reducing caries when ingested in the drinking water. However, the physiological action of potassium perfluorophosphate (KPF_6) and sodium perfluoroacetate (CF_3COONa) were strikingly different from the other fluorides. No caries inhibition occurred and no fluorine was deposited in the bones and teeth of rats drinking these solutions, whereas rats drinking the other fluoride solutions revealed a high fluorine content in their skeletal and dental tissues. It is interesting to note, also, that when the first three compounds were injected intraperitoneally the amount of fluorine retained in the skeleton and teeth was similar to the results for these fluorides administered via the drinking water (with the exception of a lower amount in the molar enamel). Yet, these injected fluorides caused no reduction in dental caries. In fact, the injected rats seemed to show a slight increase in caries even though they suffered enamel striations (Pub. Health Rep. 66, 1523, 1951). Other similar experiments with various types of fluoride compounds also confirm the fact that different physiological effects are to be expected from one compound to another (*op. cit*).

These considerations are of fundamental importance, since there is really no exact knowledge as to the constitution of "natural" fluorides occurring in the water supply. There are even indications that the source of fluorides found in the St. David (Arizona) water supply may be organic (U. of Arizona Tech. Bull. No. 32, 1937).

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[20] Muhler, J. C. and Day, H. J., J. Am. Dent. Ass. 41, 258, 1950; Muhler, Nebergall, and Day, unpublished data as cited by Howell, C. L., *et al.*, Am. J. Pub. Health 42, 44, 1952.

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Concomitant with the attempt to allay possible fears of toxic effects resulting from artificial fluorides by the claim of physiological identity of all fluoride compounds, was the equally spurious assertion that most of the fluorides ingested would be excreted. If little or none of the ingested fluorides were retained by the body then, it was implied, toxic effects were not to be expected. These statements stemmed, for the most part, from the work of one man, F. J. McClure, a biochemist with the National Institute of Dental Research.

Dr. David B. Ast, director of the Newburgh-Kingston fluorine experiment, testified before the Food Committee as a representative of the American Public Health Association. In regard to the urinary excretion of fluorine he cites McClure as stating:

> "An efficient urinary elimination of fluorine appears to be characteristic of individuals residing in certain fluoride areas of the United States where the drinking water contains 0.5 to 5.0 parts per million fluoride. The metabolism of fluorine under these conditions seems to be a normal function of the human body and seems characterized by a condition approaching *metabolic equilibrium*, at least in the adult organism." (Emphasis added — M.K.)

Later when asked by the Committee Counsel: "Do you agree that there is little information on the possible accumulation or storage of the fluoride not excreted?", Dr. Ast replied:

> "*There is so little that is not excreted, I wonder whether it is a factor at all.* But I would go along and say that we have not yet completely studied the storage of fluorine in cases where it is stored. (Emphasis added — M.K.)
>
> *Mr. Kleinfeld:* Is not that a rather important consideration, Doctor?
>
> *Dr. Ast:* No; I don't think so."

Dr. Zipkin, some two years later, apparently concurred with these views. He cited "The facility with which the kidneys eliminate fluoride . . ." and reproduced charts to show that individuals who ingest water containing 1 ppm F excrete the same concentration in the urine (Commerce Committee, p. 368).

Dr. McClure also submitted a statement to the Food Committee (p. 1672) to show that fluorine in drinking water at a level of 1 ppm does not constitute a public health hazard. He cited an extensive survey where he analyzed the urine specimens of high school boys, Army inductees, and some adults.[21] He and his associate

> ". . . found a remarkably close correlation between fluorine in the urine and fluorine in the drinking water. All the assembled data gave us sound evidence that fluorine is over 90 per cent excreted in the urine even when the water contains 4.0-5.0 parts per million of fluorine.
>
> In another experiment conducted in co-operation with Dr. H. H. Mitchell at the University of Illinois — five adult young men excreted by way of urine, feces, and sweat upwards of 90 per cent of fluorine ingested in drinking water. This applied to Galesburg, Ill., natural fluoride water, and to Urbana, Ill., water, to which sodium fluoride was added. This evidence shows that a natural fluoride water and a water to which sodium fluoride was added were exactly the

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[21] The analyses were run on *pooled* specimens from 21 to 170 individuals. (Pub. Health Rep. 59, 1575, 1944; AAAS-1946, p. 74 ff.)

> same. Both these studies convinced us that fluorine does not accumulate in the body — where added to drinking water. It is eliminated particularly in the urinary excretion."

McClure also mentions a study on the bone fracture experience of *young men* and the development of the carpal bones of children's hands which did not reveal any effects due to fluorine. He also states that his studies on rats have failed to reveal injurious effects even from amounts of fluorine fifty times greater than is proposed for fluoridated drinking water. *What he neglects to say* is that his own studies on rats show that a high proportion of fluorides ingested via the drinking water is retained in the carcasses of rats.

In a 1946 publication McClure gives an illuminating description of the above urine experiments. After stating that there was a remarkably close correlation (equality) between urinary fluorine *concentration* and the *concentration* of fluorine in the domestic water, he concludes:

> "Under this circumstance it is strongly implied by urinary fluorine data that fluorine present in drinking water in concentrations up to 4.0-5.0 ppm is largely eliminated in the urine." (AAAS-1946, p. 74 ff.)

The reasoning process involved here[22] is frankly puzzling. However, a footnote appended to the above statement gives the required clarification. He there, in part, provides the astonishing assertion:

> "Unpublished data obtained by the writer show under average conditions that volume of drinking water consumed daily approximates the total 24-hour urine-volume."

In regard to this assertion one can refer to another fluoride balance study conducted by Largent and his associates — the only other group beside that of McClure who seem to have done any relevant work in this field. Incidental to one analysis he found that the experimental subject averaged a urinary excretion equal to about one-third of the total water intake (including water in foods and water of oxidation). What is more, the urinary excretion was only one-half of the purely fluid intake (Machle, W., Scott, E. W., Largent, E. J., J. of Indus. Hyg. and Tox. 24, 199, 1942). This is consistent with other, more extensive studies on water metabolism which emphasize the extreme variability of intake and output.[23] Intake and output varies markedly from day to day and from one individual to another. There are sharp changes in urinary output from one season to another and there are large geographic (climatological) variations. Nor is there a reliable correlation between water intake and urinary output. The amount vaporized through the skin and through respiration can more than equal the urinary excretion. It is difficult to obtain an estimate of that proportion of the fluid consumption derivative from fluoridated water. This proportion surely varies radically among different individuals. Concomitant is the fact that foods cooked in fluoride bearing waters will also cause an increase in fluorine ingestion. Dr. F. B. Exner, testifying before the Commerce Committee, may well be correct in stating that ". . . if McClure proved anything he proved that less than half the daily fluorine intake is put out in the urine".

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[22] Other places where McClure repeats the statement that over 90 per cent of water-ingested fluorine is eliminated in the urine are in: Handbook of Nutrition, A.M.A., 2nd ed., 1951; Ann. Rev. Biochem. 18, 335, 1945; J. Am. Diet. Ass. 29, 560, 1953.

[23] Rowntree, L. G., in Oxford Medicine, Ed: Christian, Oxford U. Press, 1930, I, pt. 2, Chapt. 24.

The obvious sophistry involved in talking about averages as referred to water intake, urinary output, and fluorine concentrations of *pooled* samples may be illustrated by citing some analyses run off on *individuals* by Smith, Gardner and Hodge (J. Dent. Res. 29, 596, 1950). They found that the *mean concentration* of twelve urine samples from Newburgh residents was in excellent agreement with the fluoride content of the water supply (1.0 to 1.2 ppm). However, *there was an approximately recti-linear distribution of fluorine concentrations from 0.4 ppm F to 2.4 ppm F from the urine sample of one individual through that of the others.*

In regard to McClure's one other study on fluorine elimination, the testimony of Dr. I. Zipkin representing the Public Health Service before the Food Committee is of sufficient interest to quote at length. At first, referring to McClure's compilation of the fluorine content of food, he states:

> ". . . I believe he indicates there that the normal diets as consumed by the greatest majority of people contain in the order of three-tenths or two-tenths milligrams of fluoride. If we assume or, as has been stated by Dr. McClure, that individuals will consume roughly about a liter of water or 1,200 cubic centimeters, perhaps, they will get about 1 milligram of fluoride.[24] So that the fluoride contributed by the food represents only a portion, perhaps a fifth or sixth, of the amount of fluoride that would be consumed in water containing a part per million.
>
> *As for his study at Illinois, he states in his conclusions and throughout the paper, I believe, that approximately 90 per cent of the fluoride ingested by these five subjects was excreted in the urine.* (Emphasis added, compare below — M.K.)
>
> *Mr. Kleinfeld:* Five subjects?
>
> *Dr. Zipkin:* Five subjects, I believe.
>
> *Mr. Kleinfeld:* Young men?
>
> *Dr. Zipkin:* Young men.
>
> *Mr. Kleinfeld:* Can you draw any conclusions from such a study?
>
> *Dr. Zipkin:* The conclusions in the study point to the fact that in the neighborhood of up to 4 parts per million, about 90 per cent of the fluoride is excreted, thus representing a small retention of under 10 per cent.
>
> *Mr. Kleinfeld:* Would you say that such figures are statistically valid?
>
> *Dr. Zipkin:* On the basis of those subjects, they are valid.
>
> *Mr. Kleinfeld:* On five young men. Would they be valid with respect to five old men?
>
> *Dr. Zipkin:* Well, that study, of course, has not been done, and it is not scientifically proper, perhaps, to transpose information taken at one level to information taken at another level.
>
> (. . . then some remarks on another study . . .)
>
> *Dr. Miller:* Doctor, did I understand you to say that you thought the five studies were sufficient to form an opinion that would be conclusive?
>
> *Dr. Zipkin:* I think the investigation of Dr. McClure is a very accurately controlled study, and I believe one of the best studies in that field, and we believe the conclusions from the data obtained there are valid.

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[24] This assertion may be contrasted to the testimony of an officer of the American Water Works Association that people consume an average of two quarts per day of tap water (Commerce Committee, p. 410). The Surgeon General's office judges the water requirement as one to three liters per day under conditions of normal activity for a temperate climate. In a hot climate the daily intake is two gallons per day (about 7½ liters) for moderate activity, exceeding this amount if heavy exertion is experienced. Dr. E. F. Adolph is cited as estimating the range of fluid needs to be from 3 to 7 liters under a mean temperature of 80 def. F. as measured in a desert environment. (Food Committee, p. 1618.)

Dr. Miller: Doctor, as a sworn witness here and as a scientist, who, I presume, carries on studies of this type, do you recommend that findings on just five completed studies is enough and should be accepted by scientists and by the public? Are you saying that to this committee, that you are going to accept the studies of five as being conclusive and final, and that recommendations can be made on the basis of what you found in five individuals?

Dr. Zipkin: What we can say, I think, on the basis of this study, is that in this study here for these young people, the data indicates. As you perhaps realize, no data is entirely conclusive, and no data can be transposed from one situation to another situation. We do a particular type of experiment. And we believe that in this case on these five young men. We believe the data as we find it because we feel the experiment is adequately controlled.

As far as transposing this data to all young men, we say that we believe it indicates in people of this age group that we do have upwards of 90 per cent excretion of intake of 4 to 5 parts per million.

Now if that study is contested, if people do not believe it, they will have to take 20 individuals or 25 individuals. But our data indicates that this is probably a valid conclusion on the basis of the evidence that we have.

Dr. Miller: On the basis of the evidence that you have, you think you have carried it to a point where it is sufficient evidence to report to the scientific world that here are five cases; this is what we found; so this is the answer?

Dr. Zipkin: This is what our data indicates. I do not think in any scientific conclusion you can make the categorical statement, 'This is universal dogma'. I think our data points to the fact that this is probably a valid conclusion."

In the balance experiment referred to above (J. Indus. Hyg. and Tox. 27, 159, 1945), McClure gave his five young men, in addition to the amount of fluorides contained in their normal diet, various fluoride supplements amounting to three milligrams daily. These subjects were studied in a temperature environment of about 85 deg. F ("comfortable") and in a "hot-moist" environment (100 deg. F). Inspection of the data contained in Table 5 of McClure's paper seems to indicate that the daily water consumption of his subjects varied considerably, the amount ingested during the "hot-moist" periods being several times that under the corresponding "comfortable" conditions. During the comfortable periods the amount of fluorides eliminated in the urine varied from only 60 to 71 per cent when the fluorides ingested were dissolved in water and from 36 to 67 per cent when the different fluoride compounds were ingested with the food. In the hot-moist periods, the corresponding urine elimination of fluorides varied from 43 to 50 per cent for the water-ingested fluorides and from 19 to 54 per cent for the food-ingested fluorides. The remaining amounts of ingested fluorides were eliminated in the feces and the perspiration. These results form the basis for McClure's claim that there was no significant retention of fluorine in the bodies of these young men when the total fluorine ingested did not exceed 4 to 5 milligrams daily. In fact, the experiments were so successful in proving the "practically complete" elimination of fluorine that in many of the cases considerably more total fluoride was eliminated than was ingested. If H. T. Dean in his statistical studies, is to be honored for his unique contribution to number theory, it would hardly be fair to ignore McClure's discovery of the law of non-conservation of mass.

Smith, Hodge and Cox have found the normal adults from a non-fluoridated community, given a dose of 1.5 milligrams of fluoride as sodium fluoride dissolved in a glass of water, will excrete approximately one-third of it in three hours. This they claim represents the greater portion of all that will be excreted (Commerce Committee, p. 476; AAAS-1954, p. 94).

Hodge and Smith, writing in the "authoritative" volume *Fluoridation as a Public Health Measure* (AAAS-1954), are of the opinion that fluoride storage in the skeleton increases at a constant level during continued fluoride exposure. However, they do not think that any health hazard will be associated with this extra deposit of fluorides in the skeleton.

McClure fed rats fluoride as sodium fluoride and sodium fluosilicate at levels of 15 and 25 ppm F in their drinking water and found that more than one-third of the ingested fluorides were retained in the carcasses. These rats were kept on the fluoride regimen for about 100 days before being killed and analysed for fluorine content (Pub. Health Rep. 65, 1175, 1950). C. H. Kick and associates fed young rats 12 to 22 mg. of fluorides in their rations daily for periods of ten to twenty-three days. Approximately 30 per cent of the fluorine ingested as untreated rock phosphate, sodium fluosilicate and sodium fluoride were retained in their bodies (Ohio Agricultural Exp. Station Bull. No. 558, 1935). Those rats which were fed calcium fluoride excreted most of the fluoride in the feces and the rest in the urine. Apparently none of the calcium fluoride was retained. It is of particular interest to note (regarding the claim that all fluoride ions are identical) that although a small part of the calcium fluoride was absorbed into the body fluids all of this was excreted in the urine. Also, of that portion of sodium fluosilicate absorbed (amount ingested less that excreted in the feces) into the body fluids, slightly over half was eliminated in the urine, but for sodium fluoride of that portion absorbed, only 27 per cent was eliminated in the urine. Even though the ultimate percentage of sodium fluosilicate, sodium fluoride and the fluoride in rock phosphate retained in the body was approximately the same, different amounts were eliminated in the feces, and even of those amounts absorbed into the body fluids, different percentages were excreted in the urine — illustrating the different physiological behavior of fluorides in the body. Illustrative of the caution necessary in using a purely "chemical" approach, one notes that 65 per cent of the ingested sodium fluosilicate was absorbed while only 45 per cent of the ingested sodium fluoride was absorbed — a particularly puzzling result in view of the fact that sodium fluoride is much more soluble than sodium fluosilicate.

M. Lawrenz fed rats low levels of cryolite (Na_3AlF_6) and calcium fluoride dissolved in their drinking water. About 59 per cent of the ingested fluoride was retained in the bodies of the rats (J. Nutrition, 18, 115, 1939). In another study he found that while sodium fluoride and calcium fluoride apparently behaved similarly when dissolved in water, sodium fluoride was more completely assimilated in water than in food. These fluorides were fed to rats at levels of 9 to 12 ppm (J. Nutrition, 22, 621, 1941). Lawrenz also found that a larger percentage of synthetic cryolite was retained by rats compared to the retention observed with natural cryolite (J. Nutrition, 22, 451, 1941). For cryolite, he also found that less was retained when fed in food instead of water. The level of fluoride ingested, 9 ppm, was sufficient to induce a transient hematuria in the experimental rats. The data also seemed to suggest that the rate of fluorine retention decreased as the feeding period progressed (J. Nutrition, 18, 127, 1939). D. A. Greenwood has fed puppies various fluorides at levels of 5 mg. per kilogram of body weight (J. Dent. Res. 25, 311, 1946). The puppies fed sodium fluoride developed dental fluorosis and stored large amounts of fluoride in their bones. Other puppies fed the same level of fluorine as it occurs in bone meal and defluorinated phosphate did not develop dental fluorosis nor indicate excessive fluoride storage. The teeth of these dogs were also superior to those on the sodium fluoride or the control ration. S. H. Jackson made similar studies with rats (J. Nutrition, 40, 515, 1950). The fluorine retained from sodium fluoride varied linearly with the amount ingested. The proportion of fluorine retained from bone decreased as the amount ingested increased. There was also a variation in retention depending on the source of bones used and whether the bone was in the form of meal or as cooked ground bone. When the rats were placed on a meat diet with added bone, the total fluoride in the rats' carcasses reached a constant amount after six months. W. B. Savcheck and W. D. Armstrong have also studied the metabolic turnover of fluoride by the skeleton of the rat (J. Biol. Chem. 193, 575, 1951). (Incidentally, they note that those balance studies which indicate no significant retention of fluorides at low intakes cannot account for the observation that the fluoride content of human bones increases progressively with age.) They fed rats sodium fluoride in the drinking water at levels of 20 ppm F. They found that the young animals stored about 53 per cent of the apparent fluorine intake during the first twenty days, decreasing to 43 per cent of the total fluoride intake by the sixtieth day. Older rats retained less fluorine and there was also a progressive drop in the amount retained over the course of the experiment. When taken off the fluoride diet the rats tended to eliminate 10 to 15 per cent of the stored skeletal fluoride, but the remainder of the stored skeletal fluoride was so firmly fixed as not to be appreciably excreted during the rest of the experiment.

Other investigators have also indicated that an increase of dietary calcium from 0.23 to 0.73 per cent depresses the total retention of fluorides by 10 to 13 per cent when fed to rats (Lawrenz, M., and Mitchell, H. H., J. Nutrition, 22, 91, 1941). E. J. Largent has also noticed that fluoride absorption is depressed when the animal diet contains large amounts of calcium (AAAS-1954, p. 51 ff).

A study using a radio-active isotope of fluorine administered to rats at microgram levels indicated that more than half was deposited in the skeleton of young rats. Older rats retained slightly less. When sodium fluoride was administered at high levels the distribution and excretion patterns were comparable to the previous groups. This would indicate that there is no minimum level at which storage does not take place (Wallace-Durbin, J. Dent. Res. 33, 789, 1954).

E. J. Largent and his associates are the only ones beside McClure, who have done studies on fluoride retention in humans. In 1942 a balance study was made where the subject ingested less than half a milligram of fluoride daily in his normal diet (Machle, W., Scott, E. W., Largent, E. J., J. Indus. Hyg. and Tox. 24, 199, 1942). The data suggested that most or all of the fluoride ingested at these very low levels was excreted. This result is difficult to correlate with animal experiments which indicate retention at low levels and other evidence which indicates that fluorine storage increases progressively in the human skeleton (AAAS-1954, p. 95). The result may be due to the difficulty of F analysis at these low levels or more likely, the fluorides ingested in the normal diet are not as readily assimilable as artificial fluorides. A more recent study of four subjects gave indirect evidence that fluorides may be stored in human tissues over long periods when as little as 3 milligrams of fluoride as sodium fluoride is ingested daily (Archives Ind. Hyg. and Occup. Med. 6, 37, 1952; AAAS-1954, p. 61 ff). When the daily intake of fluorides was reduced radically there was a tendency to eliminate some of the stored fluorides in the subsequent period observed. Another study was done at daily intakes of 6 milligrams fluoride (Machle, W., and Largent, E. J., J. Indus. Hyg. and Tox. 25, 112, 1943). The results here indicated that the storage in the bones was of a permanent nature and was not followed by a significant loss of fluorides in the subsequent control period. The extra fluoride excreted when the fluoride intake was terminated could be accounted for by the loss of fluorides from the soft tissues, body fluids or those F ions loosely bound to the bones. In his recent summary (AAAS-1954), Largent is of the opinion that a diminution in the rate of storage may not become evident in any single experiment but over a period of an entire series of experiments. Nevertheless when solutions of sodium fluoride or of calcium fluoride were administered at levels of 6 milligrams F daily, about 60 per cent of the fluorides ingested were retained in the body. When calcium fluoride was administered via food, only about half this amount was retained since there was a large fecal elimination. Bone meal fluoride also resulted in a very large fecal elimination and a still lower storage. Calcium fluoride, in solution, also seemed to have a different physiological effect on urine output than in the control periods or the period of sodium fluoride intake. Other experiments indicated that when sodium fluoborate ($NaBF_4$) was ingested, practically all was absorbed into the body fluids and most or all of this was eliminated in the urine (J. Indus. Hyg. and Tox. 31, 134, 1949; AAAS-1954, p. 58). Sodium fluoride and cryolite were still stored in large amounts even at levels of intake as high as 36 milligrams daily.

The proponents of fluoridation, as evidenced by their testimony before Congressional Committees, have fostered the view that individuals will ingest only about one milligram of fluoride daily when exposed to an artificial fluoridation program. This is the amount that would be received when drinking a quart of fluoridated water. As already noted, water intake varies considerably. It has also been mentioned that foods cooked in fluoridated water will show an increased fluoride content. Boiling fluoridated water will increase the concentration of fluorine present if a significant amount of the water evaporates. Hence from these considerations it follows that a total fluorine ingestion of from 2 to 4 milligrams may be common in areas which are artificially fluoridated. For persons experiencing moderate physical exertion in hot weather, these levels may well be more than doubled. From the animal and human studies cited, it is clear that those individuals undergoing artificial fluoridation can be expected to retain large amounts of fluorides in their bodies.

* * *

Further to illustrate the futility of attempting to set a "normal" level of fluorine intake — and therefore a "safe level" — one must mention the varying fluorine content found in foods. In exactly what forms this fluorine is constituted is not known. McClure, in a survey of recent data (Pub. Health Rep. 64, 1061, 1949), comments on the high concentration of fluorine present in cow kidney tissue when the grain rations contained a large percentage of sodium fluoride. Dried fish is reported to contain large amounts of fluorine. Although the amount for most types of fish was of the order 1 to 10 ppm, one type had 84 ppm. Cheap mixed tea contains abnormally high amounts of fluorine — 398 ppm F — on a dry basis, although some teas had as low as 3.2 ppm F on a dry basis. A brewed tea sample is reported as containing 1.2 ppm F. Apples showed a large variation in F content from 0.035 to 1.32 ppm F. One brand of baking powder had less than 0.1 ppm F while another showed 220 ppm F. Coffee and wines also showed wide variations in their fluoride content.

From the reports cited by McClure, it would seem that there is no consistent relation between fluoride content of plants and the fluoride content of their soil. Some plants showed a very high increase in fluoride content, others were unaffected, when artificial fluorides were added. One investigator has reported a very high fluorine content for vegetables watered with fluorine-containing water, another reports no correlation between plant fluorine and the fluoride level of the local water supply.[25]

H. V. Smith, in his testimony before the Food Committee, cited instances where buckwheat grown in soils containing 180 to 360 ppm F contained about 1,200 ppm of this element. Other experiments showed that such crops as collard and buckwheat take up as much as 9,900 ppm fluorine when 102 ppm fluorine was added to the soil. The difference in fluorine absorbed seemed to be dependent on the acidity of the soil in which these plants are grown.

It should not be concluded that all the fluorine found in food and soil is of natural origin. In recent years there has been an increasing agricultural use of fluorine compounds as insecticide sprays and dusts. The fluorine tolerance for apples, set by the U.S. Food and Drug Administration, is sufficiently high to allow an apple sprayed with a fluoride insecticide to contain just as much fluoride as that found in a quart of artificially fluoridated water (Food Committee, p. 1609, 1618 ff). The use of rock phosphate fertilizers may also supply an appreciable fluorine content to the soil and ultimately to the drainage systems of the land.

Aside from the fact that the fluorine found in foods may have different physiological effects due to their more complex nature, there is an enormous and unpredictable variation in food habits. Widdowson came to this very same conclusion in a careful study of the food habits of English children (Commerce Committee, p. 478).

The picture is further complicated by the consideration that stated values of the fluorine content of foods and water can not be taken too literally. Fluorine analysis is an extremely difficult procedure even in the hands of a trained chemist and it is not unusual for different investigators to report results which are not in agreement.[26] Examples are the divergent results in fluoride analysis of water, previously cited. Zipkin and McClure made a test analysis of a known solution of sodium perfluoroacetate by the usual Willard and Winter technique and found that *no* fluorine was detected. A further analysis gave only 66 per cent recovery of the fluorine theoretically present. It took two more experimental variations before there was a yield equal to 98 per cent of the amount present (Pub. Health Rep. 66, 1523, 1951). If food products are high in silica the usual method of fluoride assay is unreliable (Commerce Committee, p. 478). Many substances which are used for the "purification" of municipal water supplies may still be present in the water plant effluent and may seriously interfere with attempts at accurate fluorine analysis (AAAS-1954, p. 205 ff). Perhaps this may explain the result obtained by Smith, Gardner and Hodge, who found a fluorine content of 1.36 ppm for the Newburgh water supply which is supposedly regulated to not exceed a fluoride level of 1.2 ppm (J. Dent. Res. 29, 596, 1950). Largent has indicated that analytical difficulties are frequently encountered in the course of determining the fluoride content of biological materials (AAAS-1954, p. 54). Samples of blood collected from a subject who ingested 12 mg. sodium fluoride daily varied between 0.55 to 7.7 ppm in fluoride content, while the blood samples from another subject whose total fluoride intake was only one-half milligram daily apparently varied between 0.009 to 6.9 ppm!

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[25] This interpretation, based on the data cited by McClure, differs in some respects from McClure's interpretation. McClure's reasoning is extremely difficult to follow particularly in his attempt to set a 0.2-0.3 ppm fluoride level in the "average" diet.

[26] Food Committee, p. 1569; Fluorine, Haszeldine and Sharpe, Methuen and

* * *

Publicity has been given recently (*N.Y. Herald Tribune*, 5th March, 1955) to a ten year study conducted by the Public Health Service to demonstrate that: "Drinking water is safe medically even when it contains eight times as much fluoride as is recommended for use in preventing decay of teeth in children. . . ." This study was conducted in Bartlett, Texas, which has a natural fluoride content varying around 8 ppm F in its water supply (AAAS-1954, p. 110 ff). The town of Cameron, Texas, with a reported water-fluoride content of 0.4 to 0.5 ppm, was used as the control study area. Because of the nature of the Texas climate, and therefore the excessive water consumption, one must wonder at the legitimacy of employing as a "control" area a town which had a water-fluoride content as high as 0.5 ppm F in 1953. The water supply of Bartlett contained about four times as much total dissolved solids as that of Cameron, possibly a not insignificant consideration from the viewpoint of other investigators.

The 1943 examinations included 116 individuals in Bartlett and 121 in Cameron, all of the white race, ranging in age from fifteen to sixty-eight years. The results of this examination were compared to the second one made in 1953. It is noteworthy that the 1953 examining team (one physician, one dentist, one nurse and three assistants) consisted of entirely different personnel from those constituting the examining team in 1943. As an indication of the comparability of the two groups studied to the normal population we can note that the ratio of male to female residents in these groups was approximately 1 to 2, while the male to female ratio for the entire town population was 0.9 to 1 in Bartlett and 1.1 to 1 in Cameron.

Co., London 1951; Fluorine Chemistry, J. H. Simmons, Academic Press, N.Y., 1950; The Drama of Fluorine, L. Spira, Lee Foundation, Milwaukee, Wis., 1953.

The comparability of the age distribution may be illuminated by noting that fourteen persons in the Bartlett group died during the ten-year period between the 1943 and 1953 surveys, while only four persons died in Cameron. The authors of the study comment ". . . the difference between the age-corrected mortality rates is not significant by statistical analysis".

The official report indicates that 5.4 per cent of all the continuous resident Bartlett individuals that were examined showed coarse trabeculation of the bones. However Dr. Arnold, one of the authors of this report, in his testimony before the Food Committee (p. 1656), indicates that an independent radiologist who examined the x-rays of the participants felt that 12 per cent of individuals *over fifty years of age* showed a coarse trabecular structure of the bones. Whether the radiologist or Dr. Arnold thought this was of no general health significance is not clear.

The incidence of cases of increased bone density in Bartlett residents as reported in the AAAS article (see footnote to Table 6 or 8) also seems to be less than that quoted by other sources.[27]

In their conclusions the authors state:

> "No clinically significant physiological or functional effects resulted from prolonged ingestion of water containing excessive fluoride, except for dental fluorosis."

However, in a report of the National Research Council referring to a study of Bartlett, Texas (Commerce Committee, p. 475):

> "There was, as would be expected, a high incidence of mottled enamel and an increased bone density in the spine and pelvis. However, the greater incidence in the high-fluoride group of a certain brittleness and blotching of the fingernails, of hypertrophic changes in the spine and pelvis, and of lenticular opacities of the eye requires further epidemiologic investigation, in view of the fact that the fluoride level in this community was eight times above that recommended for fluoridation."

The resolution of these two mutually contradictory statements must be left to the impartial eye of the reader.[28] To this can only be added the note that Dr. L. Spira has already pointed out "mottling" of the fingernails as a symptom of fluorine toxicosis (The Drama of Fluorine, Lee Found., Milwaukee, Wis., 1953).

* * *

Schlesinger, Overton and Chase have conducted a medical study, sponsored by the N.Y. State Department of Health, of children in Newburgh where the water supply is artificially fluoridated. Commenting on this study, the National Research Council states:

> "The results of the *careful* and controlled physical examinations of the

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[27] Commerce Committee, pp. 472, 373, 446, 294, 342, 348; Food Committee, p. 1496.

[28] The reference cited for the statement in the National Research Council report is: Shimkin, Arnold, Hawkins and Dean; "Medical Aspects of Fluorosis", AAAS, 1953, *In Press*. Inquiry to the American Association for the Advancement of Science brings back the reply that this article was never published and that the data was incorporated in the chapter "Medical Aspects of Excessive Fluoride in a Water Supply" found in the AAAS, 1954, article (written by Leone, Shimkin, Arnold, Stevenson, Zimmerman, Geiser and Lieberman) which is cited here as the official study of Bartlett. It must be noted that Dr. Arnold is listed as a co-author of the unpublished report, the report that was published in the AAAS, 1954 volume and is also co-author of the National Research Council report from which the above citation was taken.

> Newburgh-Kingston children give to date a clean bill of health to water fluoridation under the conditions of this test (Schlesinger Overton and Chase, 1953). Comparing Newburgh children with those in Kingston, the control city, the blood picture is normal, urine analyses are negative, *the condition of nails*, skin and hair is *entirely comparable*, the results of the eye and ear examinations are similar, and no detectable difference was found in bone density in children in the two cities studied. The results so far have thus revealed no deleterious systemic effects from the ingestion of fluoride in drinking water at the level employed." (Emphasis added — M.K.)

The investigators who conducted this study seem to be in agreement with the above remarks. They too conclude that:

> "There has been no indication of any systemic effects, adverse or otherwise, from the use of fluoridated water on the basis of these findings." (AAAS-1954, p. 131 ff; Am. J. Pub. Health 43, 1011, 1953.)

However, in their report, these authors find:

> "Among the boys in Newburgh, a slightly but significantly higher proportion of fingernails with leuconychia or occasional small white spots were observed, but this does not appear to have any pathological significance." (*op. cit.*)

As noted previously, L. Spira claims this is an early symptom of chronic fluorine toxicosis. The Bartlett-Cameron study (the "unpublished" one) seems to confirm this hypothesis.

The authors of the Newburgh pediatric study also present a graph comparing the weight of girls in Newburgh to that of girls in the more fortunate city (no fluorine) of Kingston. After four years of age, the weight of girls in these two cities diverges sharply. The authors of the report claim that this sharp increase in weight of the Newburgh girls is due to one overweight child.

> "Since the number of children at any one age level is small, one extreme measurement can influence the average unduly. It is apparent, nevertheless, that introduction of fluoride in the drinking water has not altered the rate of growth in height and weight of the children drinking fluoridated water as compared with those drinking fluoride free water."

What is actually "apparent" is that the number of children is so small that the results are meaningless.

As Representative (Dr.) Miller has pointed out, other examinations made, such as blood counts and hemoglobin determinations, are rather superficial (Food Committee, p. 1750).

Indicative of the "carefulness" of these studies is Dr. Ast's statement: *"There was no evidence of any disfiguring mottled enamel in Newburgh."* (*N.Y. Times,* 12th April, 1955; *Water Fluoridation,* N.Y. State Dept. Health.) It is suggested that Dr. Ast wait a few years. Mottling is rare in deciduous teeth and will only become readily evident in the permanent teeth of children exposed to fluorine-bearing waters for twelve or fourteen years. Or, perhaps, we have different criteria as to what constitutes "disfiguring mottled enamel".

Assuredly, these previous medical studies on both a naturally fluoridated population and on artificially fluoridated children are worthless. The only other crutch the proponents of fluoridation must lean on are the statistical mortality studies which purport to show no difference in death rates between those cities whose water supply contains natural or artificial fluorine and those which are fluorine free.[29] These conclusions are based on data "adjusted" for age, race, and sex. One wonders why identical cities could not be found to obviate such an "adjustment". We have already cited the remarkable age adjustment for mortality rates in Bartlett, Texas, where fourteen deaths are "adjusted" into four deaths. From testimony presented to the Commerce Committee (p. 387), it would seem that similar manipulations were used in these broader statistical studies.

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[29] Hagan, T. L., *et al.*, Pub. Health Rep. 69, 450, 1954; Commerce Committee, p. 374 ff.

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As stated previously, fluoride compounds are extremely toxic. There is a large biological variation in animals and men, and due to the limited data available it is difficult to set any definite limits to the chronic or acute toxicity of fluorides. The dose lethal to human adults for sodium fluoride or sodium fluosilicate has been reported to vary from one to ten grams.[30] An amount equal to one-tenth the adult dose would probably be sufficient to dispatch a child.[31] While it is not unusual in present medical practice to administer occasional or intermittent quantities of potentially toxic compounds, some concern must be expressed at the prospect of ingesting, on a daily basis, even trace amounts of so acutely toxic a substance as fluoride. It is admittedly clear that the vast majority of "official" medical opinion does not consider that there will be any danger of chronic poisoning associated with artificial water fluoridation. But a search of the literature makes it equally clear that such a conclusion does not stem from any substantial body of knowledge and, on the other hand, there exists sufficient evidence to warrant qualms as to the safety of continued ingestion of fluorides.

While storage of fluorides in the skeleton may in some respects act as a detoxification mechanism, fluorides are also strongly reactive in the enzyme systems and may influence the soft tissue in cases where the detoxifying activities of the bones or elimination by the kidneys decrease in efficiency. There is even some evidence, from rat experiments, to indicate that the toxic effects of fluoride increase with age.[32] Testimony before the Food Committee (p. 1753) indicates that children with defective kidneys show a higher retention of fluorides.

Animals grazing where the vegetation is contaminated by fluoride dusts or fumes show obvious damage to the bones and teeth. Men who have been exposed to fluoride dusts or fumes, in industrial work, show radiographic evidence of increased bone density. The joints may pain and become stiff and there may be a reduced motility of the spine and thorax. Digestive disturbances and anemia are characteristic of this condition. Cases of industrial exposure to fluorides, where fluorosis is readily evident, takes place, it is true, at levels much higher than can be expected from the normal use of fluoridated water. However, the fact that crippling fluorosis only becomes generally evident, through x-ray examination, at levels perhaps ten (or less?) times that encountered from fluoridated water is not particularly reassuring.[33] Animals fed fluorides sufficient to cause evident physiological damage to the skeleton, as revealed at post-mortem analysis, did not reveal bone changes by roentgenographic examination (Largent, E. J., *et al.,* J. Indus. Hyg. and Tox. 25, 396, 1943).

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[30] One (avoirdupois) ounce is slightly more than 28 grams.

[31] Roholm, K., Fluorine Intoxication, Lewis and Co., London, 1937; Commerce Committee, p. 471, p. 317.

[32] Voegtlin, C., and Hodge, H. C., Pharmacology and Toxicology of Uranium Compounds, McGraw-Hill, N.Y., 1949, VI-I.

[33] Heyroth, F. F., Am. J. Pub. Health 42, 1568, 1952; Commerce Committee, p. 470 ff.; Food Committee, p. 1787 ff; Rohelm, K., *op. cit.*; Spira, L., *op. cit.*

Pigs fed fluorine at high levels (0.032 per cent) for less than half a year revealed kidney damage. The breaking strength of the bones decreased with increasing amounts of fluorine in the ration. The fluorine in rock phosphate and sodium fluoride was particularly deleterious. The teeth of sows fed high fluorine rations for two years were frequently worn to the gums. Feed consumption and growth of chicks were also affected by diets "rich" in sodium fluoride or rock phosphate besides exhibiting a decreased clotting time of the blood. However, rats showed opposite blood effects (Kick, C. H., *et al.,* Ohio Agricultural Exp. Station Bull. No. 558, 1935). Cows have been fed rock phosphate at what were thought to be low levels of fluorine intake. It took a long period, two years, before evident toxicosis developed. Molar abrasion was apparent and there was impairment of growth and milk production (Food Committee, p. 1566). Other reports indicate that a level as low as 0.5 pmm F in the ration produced enamel hypoplasia in the teeth of adult cattle and that 50 ppm F was sufficient to affect the growth of heifers (as cited by Hodge and Smith, AAAS-1954). There are also indications, from animal experiments, that fluorides may be more toxic for hyperthyroid individuals (Food Committee, p. 1757). One set of experiments performed on mice showed that there was no change in the incidence of cancer but that the development of the condition was accelerated, though another independent investigator reached the conclusion that fluorides were not carcinogenic for mice. For such a subtle effect, it would seem that the number of mice used in both sets of experiments was not sufficiently large to allow drawing definitive conclusions (Food Committee, p. 1530 ff; Commerce Committee, p. 306 ff).

The few studies made on the increase in fluorine content of pracental tissue and human blood for individuals drinking fluoridated water indicate a correlation to fluoride ingestion. The exact physiological mechanism is not clear nor are all the data consistent.[34]

With specific reference to bone effects in humans we may cite studies in England which found x-ray indication of skeletal change in children and young adults who had been exposed to low (recommended) levels of natural fluorine in their water supply, though defective nutrition was associated with such maldevelopment.[35] One pediatrician in Texas, in an area of endemic dental fluorosis, has noted that infants tend to show a bowing of the legs which he ascribes to the interference of fluorides with skeletal metabolism.[36] Perhaps the famous Texas cowboy strut is not due just to occupational hazard.

Reports from India indicate severe bone manifestations from fluoride ingestion at levels regarded with little concern in the United States. Skeletal changes have been evident in areas where the fluorine content of the water supplies average 3 to 5 ppm. In Podili, a high incidence of bone affections was evident in adults consuming water from wells containing from 0.6 to 5 ppm fluorides. In south India where the majority of wells showed an F content of 1 to 3 ppm (maximum of 10 ppm) adults over thirty years of age complained of pain in the spinal column and stiffness in the skeletal joints. Residents past forty years of age who were affected evidenced rigidity of the spine and joints, and interference with breathing.[37] Undoubtedly, these severe endemic conditions may be due in part to increased water consumption and poor nutrition. Whether this environment is so radically different from certain local areas in the southern United States is a pertinent question.

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[34] Gardner, D. E., *et al.,* Science, 115, 208, 1952; Held, H. R., Schweiz. med. Wochschr., 82, 297, 1952, as cited in J. A. M. A., 157, 405, 1955; AAAS-1954, p. 54; Smith, F. A., *et al.,* J. Dent. Res. 29, 596, 1950.

[35] Food Committee, p. 1707; Kemp, F. H., *et al.,* Brit. J. Soc. Med. 2, 66, 1948 and *The Lancet* 2, 93, 1942.

[36] Lemmon, J. R., Texas State J. Med. 30, 332, 1934 as cited by Dean, H. T., J. Am. Med. Ass. 107, 1269, 1936.

Hodge and Smith, writing in the "authoritative" (AAAS-1954, p. 96) volume on fluoridation are of the opinion: "On the basis of present knowledge it is hard to see any hazard associated with the extra deposition of fluoride in the skeleton that will *undoubtedly* accompany water fluoridation." (Emphasis added — M.K.) In fact they seem to hold the view that a positive benefit to the skeleton may come from the fluoridation of water. Dr. Leone, in testifying about the Bartlett-Cameron study (Commerce Committee, p. 372), states that there is good evidence (?) that increased bone density and coarseness (as recorded in the autopsy of a Bartlett resident) is beneficial, particularly in aged persons. Since fluorine is claimed to have such remarkable hardening qualities in its interaction with organic materials it is a small wonder that it has not yet been recommended as an aphrodisiac.

* * *

It appears to follow from the present experimental evidence that the attempt to fix safe levels of fluorine ingestion is supported by a dubious framework. There seems to be a wide individual range from body *toleration* of fluorides to the stage where continued ingestion produces chronic toxicosis. Attempts to determine a quantitative limit of fluorine ingestion at which there is a qualitative change from physiological toleration to that of a pathological state is based for the most part on animal data. It is evident that such data, *insufficient in itself,* is highly inadequate for assurance that no deleterious medical effects will occur in humans. Apropos the view that inferences from animal data can be transferred to humans is Largent's study of a cow whose forage had been heavily contaminated with fluorides over a long period of time (AAAS-1954). Yet the highest average fluoride concentration for the bovine blood was lower than the highest values observed in human blood. This was particularly puzzling since the concurrent concentration of fluorine in the urine of the cow was much higher than the urinary fluoride levels of human subjects.

In terms of dosage per body weight, incipient tooth changes in rats may be produced by daily ingestion of fluorides at a level of 1 milligram per kilogram of body weight (Footnote 31). Yet dental fluorosis will probably be produced in a child ingesting fluorides at a level ten to twenty times less than this. From another point of view it takes a very much higher concentration of fluorine, in parts per million F, in food or water to produce dental fluorosis in most animals than is necessary for a similar effect to be evident in children (Hodge and Smith, AAAS-1954). All this would imply that man is much more sensitive to fluorine than animals and that even the quantitative levels at which ingestion of fluorine by animals passes from tooth effects to that of acute morbidity (not even firmly established) may narrow for humans.

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[37] Venkataramanan, K., J. Indian Med. Ass. 21, 112, 1951; Pandit, C. G., *et al.*, Indian J. Med. Res. 28, 533, 1940; Shortt, H. E., Indian J. Med. Res. 25, 553, 1937; Shortt, H. E., Indian Med. Gaz. 72, 396, 1937.

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At several points in the hearings before the two Congressional Committees, the proponents of fluoridation managed to slip in the claim that fluorine was a "natural" and "normal" element of nutrition. This assertion founded itself on the fact that many foods contain slight amounts of fluorine — "So that fluorine is a normal constituent of the average American diet" (Food Committee, p. 1503). Further: "Since few naturally occurring waters are completely free of fluorine, one should always think of a fluoridation program, not as addition of a substance foreign to water, but as a process of supplementing an inadequate concentration" (Commerce Committee, p. 341). In fact, though foods do contain fluorine, these amounts are insignificant compared to that which would be ingested from fluoridated water. It is also quite likely, as was previously shown, that the complex form in which fluorine occurs in food would not be physiologically the same as artificial fluorides. There is good reason to believe that part of the fluorine content of foods arises from the use of fluoride insecticides and fertilizers or from the methods of food processing. As Spira has pointed out, it is even possible that some "naturally" fluoridated waters derive part of their fluorine content from the methods entailed in purification and storage (*Contemporary Issues* No. 23, 1955). Even if, for argument's sake, we consider the fluorine found in food and water as "natural" we must note that only about one million of the U.S. population is exposed to water containing 1.0 to 1.5 ppm fluoride — the so-called optimum amount of fluoride. The million and a half ingesting water containing a higher concentration show (at least) deleterious dental effects. The number consuming more than 5 ppm fluoride-water is only forty thousand. The two million consuming 0.7 to 1 ppm fluoride-water presumably do not show "optimal" dental benefits. In a population numbering 160 million, one cannot consider then that exposure to fluorine is common in the United States. Aside from the technique of *using an abnormal example to prove the normal,* the proponents of fluoridation become guilty of the accusation they level at the food faddists: *what occurs naturally must be good!* While it is quite true that man in pre-industrial society managed to establish some sort of equilibrium with nature, this *modus vivendi* was firmly based on the avoidance of those elements directly detrimental to his well-being and the cultivation and transformation of the given environment for rational objectives. The poison ivy in the woods is just as "natural" as the wild berry; both the sharped beaked hawk and the grain in the field are part of the natural environment to the field rodent. If fluorine is to be considered a natural (i.e. necessary) element of nutrition it is difficult to explain why the range of physiological toleration is so narrow, or why its role in dental health (accepting even the most optimistic claims) is so limited.

Even the physiological role that fluorine plays in tooth structure is unclear. While McClure claims that the teeth of regular consumers of fluoridated water contain more fluorine than teeth of individuals not exposed to fluorides,[38] he has already declared that there was no significant difference in fluoride content between sound and carious teeth (J. Dent. Res. 27, 287, 1948).

Observations on primitive people in many parts of the world leave no doubt that they show a much lower incidence of caries than do individuals in the industrial countries. Primitive people experience a marked increase of dental decay upon adopting the habits of the white man. In large part, dental caries seem to be an industrial disease that cannot be *simply* explained as due to the presence or lack of some single element in the diet or other isolated nutritional factors. Eskimos who consume little or no milk have sound teeth until exposed to "civilized" practices.[39] Studies on college students in the U.S. seem to show a significant rise in the incidence of dental decay in more recent years (Brekhus, P. J., J. Am. Dent. Ass. 42, 424, 1951). The National Research Council talks even of the ". . . alarming increase in the prevalence of dental decay . . ." during recent centuries (Commerce Committee, p. 474).

Individuals residing in areas where the water is fluorine-free are known to have excellent teeth (Food Committee, p. 1595 ff). Food grown in different parts of the U.S. has been fed to hamsters and significant differences in the rate of decay has been noticed. However, these differences could not be correlated to the fluorine content of the ration (Food Committee, p. 1520).

It would not be warranted to attempt a definitive opinion as to the exact causes of tooth decay. But this much is a *certainty*: the prevailing attempt to treat the problem by purely local and chemical means is a one-sided and foolish procedure *guaranteed of its inadequacy in advance*. The "solution" to dental decay can only lie in the over-all nutritional intake and habits of modern man and with the effects of the *general* industrial environment. If pressed for a more detailed answer: the problem must transform itself into a social one and link up with all the other evidence showing modern (capitalist) society has bred forth an alarming increase in other diseases even more morbid in nature, particularly heart disease and cancer.

To expand on this point one must, in contradistinction to the meaning of the term *natural,* illuminate the meaning of artificial. The reaction to the *obvious* deterioration in the quality of foodstuffs and the land-ruinous methods of food production characteristic of American society has produced a school of thought (naturopathy) which regards artificial (synthetic) fertilizers and all purely chemical aids to agronomy as intrinsically deleterious to human welfare. This movement has been influential enough to sustain many, if small, commercial enterprises vending medication of natural (non-synthetic) constitution, and foods grown only with "organic" fertilizers. To such individuals the addition of a synthetic chemical such as sodium fluoride to the common water supply is immediately suspect. However the ingestion of fluorine as it occurs in bone meal may even be accepted as beneficial — since it is "more natural".

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[38] McClure, F. J., and Likinz, R. C., J. Dent. Res. 30, 172, 1951, as cited by Stadt, AAAS-1954.

[39] Rosebury, T., in Dental Science and Dental Art, Ed. S. M. Gordon, Phila., 1938, Chapt. VIII.

Both viewpoints, the one expressed by Dr. H. T. Dean — "These unprecedented disclosures of the past few years point directly to a new advance in environmental regulation through chemical control" (Footnote 13) — and the other which regards synthetic foods and artificial medication as intrinsically noxious — are each characteristic of the fetishizing influence and tendencies of capitalist society. A productive mechanism in agriculture and industry whose essence is profit rather than human need and use cannot but engender manifold one-sided relationships and concepts on which to nurture itself as the vicious ring implicit in its own historical development draws tight. The representatives of the official schools of scientific thought tend to view man and his relation to the environment in the same terms as the elements in a laboratory process. The physiological and pathological interactions between man and nature become transformed, in *current medical research,* into data amenable to statistical symbolism for manipulation in an automatic computing machine. Creative research thus metamorphosizes into statistical correlation and the next Nobel Prize for medicine will undoubtedly be awarded to an IBM machine. Just as this tendency is a *necessary* crutch to the irrationality of modern society so also does the food faddist and advocate of naturopathy play a *socially necessary* role. Both schools support the dichotomy in modern thought and by their very existence complement each other in the general tendency to drive toward such extremes of one-sidedness that a rational solution becomes impossible in the given social framework.

The tendency to "epidemiological" methods becomes more and more prominent in medical research. Witness the Salk vaccine publicity — appropriate to the premier of a Hollywood coquette rather than the scientific (objective) evaluation of a concrete method. The basic fallacy inherent in the "epidemiological" technique is grounded in the attempt to derive a statistical correlation, *in a simple way,* between two biological factors. Hence the widespread administration of a drug and the attempt to compute the decreased incidence of a specific disease. The methodology is derivative from the mathematical concept of representing a function as a series expansion of its independent variable — that is, one can draw a curve which will correlate the decreased incidence of disease to the quantity of medication administered. One can even give more depth to the argument and admit the presence of several variables which when the proper functional forms are known (from statistical analysis) will determine the end effect more or less precisely. This is an extremely static conception which can only deal with the appearance of the phenomena at the given immediate level. It can never indicate the real (essential) processes at work nor their complex interaction with the concrete organism in its manifold totality. This type of phenomenological (positivistic) methodology will, *of necessity,* break down once many interacting factors enter into the original relationship. The most that the empiricist can attempt to do under such circumstances is to introduce small correcting factors (perturbations) into the original scheme so that the more complex variations may be included.

But this too *of necessity* will prove inadequate if the modifying relations are not static but rather undergo a complex and *changing* interaction with each other and the main organism and if in fact the organism itself (the phenomenon) is by its essence one which becomes transformed (as a phenomenon) by its interaction with the environment. To put it into more concrete terms: the administration of a specific drug (only *one* of the factors in a *complex* environment) in the hope of computing a simple dosage-response relationship, completely ignores the *essence* of the phenomenon — that man as a being will react to the administration of the drug in such a way as to undergo a qualitative change, that is, transform himself into a phenomenon essentially different from that which existed prior to the introduction of the new environmental factor. (It is understood, of course, that before a qualitative change occurs, the interacting elements must first reach a certain quantitative level.) From this it could have been anticipated that when antibiotics were first introduced they had an immediate and amazing success on the relatively few individuals exposed to this complex medication. However, when the use of antibiotics became widespread and were even used as common nostrums, it was noticed that individuals suddenly developed allergies, fatal at times, to specific antibiotics which had previously caused them no distress. Even the ability of the drugs to alleviate a disease, for which they had been very effective, decreased. It seems that more virulent strains of specific diseases developed as the result of the use (misuse) of antibiotics. In complete disregard of the more cautious advice of a few prominent medical researchers the medical profession, nevertheless, proceeded onward with the administration of more and newer forms of biotic drugs.

What was completely ignored is that man and his environment are not static entities that can be represented by static and formally empty mathematical equations. The use of a new drug on a widespread scale immediately generates reactions from the human organism and from the disease organisms spread through the environment. The necessity to adapt to this new element is not only characteristic of the human structure but also of the disease organism — or any other living being. The nature of this type of transformation is not only largely unknown to present science, but is *unknowable on the basis of the present trend in the methodology of medical research*. That this is so follows from the fact that the dominating tendency in current medical practice is to set up large scale experiments which attempt to find some statistical correlation between a therapeutic method and the decreased incidence of a morbid condition. The notion basic to this methodology is that there exists some mathematically determinable relationship (at least in an approximate sense) between man and his local environment. The use of automatic computing machines comes into play when the attempt is made to find the mathematical function most closely approximating the raw data. So the machine performs the task of rejecting data which does not have a high order of statistical correlation and the retention of results which seem due to other than chance variation. It is superfluous here to examine the consistency of the basic mathematical framework or even its abuse in day-to-day practice. What is of essence to the argument, and worth repetition, is that the relationship of the organism to its environs is one of changing character. If for any given instance this is representable by a mathematical function, then for the next instance (qualitatively different) an entirely different representation is necessary. The interaction of man and nature constantly produces *new forms of existence* which cannot be represented *in a continuous fashion* by mathematical representation. That is, a representation of the continuous transformation of the relationship between man and his local environment requires a methodology which is beyond the framework of present mathematical theory.

Thus the only fruitful approach to medical research lies in methods which are allied to what are usually called "clinical" methods. This is characterized by intensive study of a small number of individuals in the attempt to discover the real (essential) forces operating on the biological organism as a totality. From such a limited study one can then try to verify the reality of these forces (as abstractions) on a larger scale. The most necessary step would be to ascertain the process involved in the interaction of the biological forces with themselves and the exterior environment; and how in such interaction they become modified so that they produce the phenomena *which are directly apprehended,* and which may appear to assume transitory forms due to the constantly changing nature of the real elements involved in existence. The only possibilities that may exist for the representation of biological phenomena in the form of scientific laws stems from the discovery of the *basic tendencies* operative in the biological being.

On the other hand one must deal with the equally one-sided approach of the naturopaths. Recognizing the obvious *ersatz* character of modern agricultural produce, yet limited by their moribund ignorance of the real social forces which provoke such a condition, these people (food faddists and the like) react by throwing off all rational considerations and push to the extreme conception that all synthetics are inherently suspect. Deeply involved in such concepts is the notion of primitivism. Thus one has the phenomenon of the individual who would rather hunt with bow and arrow than with gun. Or those who favor the rod and reel over the fish net. Or, to push still further, the present trend of primitivism in modern art. All, examples of the irrational reaction to modern technology — the desire to avoid a solution of the contradictory social phenomena with its extremes of abundance together with the unsatisfied material needs of the population by the complete rejection of the problem.

Yet, with respect to the food faddists, one must honestly comment that limited as their basic view may be, the quality of food stuffs would unquestionably be vastly improved if agronomy returned to the use of organic fertilizers. The entire structure of plant ecology is of such a complex nature as to have been seriously disturbed by the widespread and one-sided use of artificial fertilizers. The reasons for such abuse are identical with those involved in the present use of drugs on humans. The total biological process is neglected in the attempt to establish a simple response relationship. The mere mixture together of all the elements of the human body does not create life nor does the mere addition of chemical fertilizers produce a healthy plant nutrition. Disregarded is the role played by the micro-organisms in the soil which convert naturally present minerals into forms assimilable to plant life. The poor qualitative character of agricultural produce is simple testimony to this fact. If any approach is to be recommended, it must have as its fundamentals the recognition that plant life has achieved a delicate and in some cases a precarious balance with its environment. The use of synthetics is an admissible procedure when directly related to the long term "nutritional" needs and use of the land. What is at the crux of the problem today, however, is not the use of synthetics *per se,* but rather their compulsive use in a distorted manner to satisfy the immediate profit needs of the economy. So whole forests are destroyed without regard for their effect on the surrounding watershed. Chemicals are introduced into the soil which may accelerate crop production quantitatively, but in later years produce poor crops or make the land even unfit for use. The production of animals, a nefarious example is chickens, is put on a factory basis and all sorts of possibly deleterious chemicals are injected to "improve" growth and generally to make them available for market at a rapid pace. At the present stage of scientific knowledge — admittedly ignorant of the basic nature of the life process and unable to synthesize even the lowest form of life — it remains *necessary* to proceed with extreme caution in the large scale introduction of synthetics into the total biological process. In the given social structure such a consideration acts against the very basis of society. So the posing of the extreme position — the rejection of synthetic technique as such — gives impetus to the polarizing tendency of the society and provides ground for the *more dangerous* tendency toward the "chemical control of nature".

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One question still stands. If, as pointed out, the premises of the fluoridation program are of such dubious character, then why is practically the whole medical profession (in the official sense) giving it such strong support?

There is no doubt that there exist strong social forces which are attempting to compel universal fluoridation. When the governor of Illinois goes to the length of vetoing legislation calling for a referendum and thus opens the way for purely administrative action, it is a sure sign of political pressure being brought to this issue. Also highly indicative is the fact that during the meeting of the State Dental Directors in 1951 — the minutes are not available for public information — the issue was deemed of sufficient importance for the Public Health Service to discuss at length, ways and means of making the procedure acceptable to the public. Some individuals opposed to fluoridation managed to obtain a copy of the minutes and short excerpts are reproduced in the Hearings before the Commerce Committee. Since the Public Health Service is unwilling publicly to release the full copies, these excerpts must be taken at their face value. It is enough to say that they read more like a beer salesmen's convention rather than a medical congress.

The opponents of fluoridation have offered various theories to account for the strong official support of this scheme. These range from charges that the aluminium industry is using it as a vehicle to dispose of a by-product, or that the sugar industry deters interest from the role that excess carbohydrates may play in dental decay, to the charge that the Public

Health Service is dominated by communists who wish to poison the country with sodium fluoride.

Certainly the commercial exploitation of fluorides may play some small role. But the total amount of money involved, even if the entire U.S. were subjected to fluoridation, is too small to explain the extreme pressure being brought on a national scale to implement this program. No doubt also that the sugar interests are willing to support research which directs attention away from the role of sweets in dental decay, but again, this cannot explain the very strong backing given this program by the leading medical associations.

If there is any explanation it must be a social one. It would seem, most reasonably, that fluoridation has been seized upon by a government bureaucracy — The Public Health Service — and used as a vehicle to justify and extend its own existence. An agency created for the express purpose of improving the nation's health must on the face of it make some efforts in this direction. It must have some feather in its cap when it comes begging for more funds. Because of the very nature of the social structure it must produce readily recognizable "advances" and is quite willing to proceed on a totally inadequate basis. The recent fiasco with the Salk vaccine is proof enough of this.

Such misuse and *premature* application of medical hypotheses is not accidental. The misuse involved in the extended use of antibiotics, the Salk vaccine, or the fluoridation program do not stem from purely fortuitous circumstances. Any such medical "discovery" *must immediately enter into general use* because of the very nature of the society, which drives to drastic one-sided solutions to cope with the very problems it creates. There is no doubt that infantile paralysis is a "civilized" disease, just as dental decay, and both have given rise to bureaucratic institutions which have a vested interest and a driving compulsion to pull out of the air a "cure". Otherwise, as institutions, they could not justify their social role. It is characteristic of advanced capitalist society that such bureaucratic organizations should subvert their original premises and become "things in themselves", solely interested in their own perpetuation at any cost. In this role, they are aided by the vast commercial interests involved in the pharmaceutical companies. "Cures" are big business — and extremely profitable. The vendor of snake medicine, the Indian man with the wagon, has given way to the modern pharmaceutical "missionary man" who now makes available to the local physician the latest information on the "new cures". If only the public were aware of how little true information the local physician has about the medication which he so readily dispenses!

Of course the individual scientists play their role also — the division of labor is complete. In order to live, professionally, scientists are driven by the social compulsion to publish and to discover "something new". *Publish or perish* may be humorously intoned in the university halls, but all too unfortunately, it is a realistic appraisal of professional life. The general strain of the social structure has its reflection in science. Because of the general inability to formulate broad and deep solutions to scientific problems, the individual researcher is driven toward specialization in some narrow field. This combines with the professional necessity to publish a quantitative volume of work. It is not surprising, therefore, that he will seize on some small aspect or transient relationship and magnify it out of proportion to its real worth. Forcing him into this position is the increasing volume of government sponsored projects which necessitate that something be shown for cash and the pressure of the university upon its departments to produce results impressive to its endowment interests. Frequently professional promotion hinges on the number of papers published, content playing only a minor role.

These later topics are touched upon only in a cursory fashion; the deeper implications of the general scientific methodology are left for another study. Yet, it is hoped that some measure of completeness has been achieved in reviewing the fluoridation thesis and that the totally spurious structure of this scheme has been made evident. It only remains that the medical community discover that its real progress lies only with the general interest of society and that consequently it take a strong stand against the contamination of drinking water by fluoridation.

August, 1955.

LIBERAL LOBBY OR POPULAR PROTEST?

An Exchange of Views

[The following is a continuation of correspondence, initiated in an earlier number of Contemporary Issues *(No. 20), between a Canadian reader and an American supporter of* Contemporary Issues, *on the best means of making opposition to the H-bomb effective.]*

April 2nd, 1955.

Dear Paul,

Thank you so much for your good letter of 29th March. I can fully understand how the pressure of business would delay you — I often find myself in the same predicament. Alas and alack this mid-twentieth century world is an age of notes rather than letters of our sort, for no one seems to find the time to put his thoughts down on paper unless he intends to sell them. And if one intends to sell one's ideas they are, likely as not, not one's own but an emasculated version of what one would like to say and what one knows will be printed.

That is why you and *Contemporary Issues* are performing a unique, if not unprecedented service to your readers. Yours is a magazine whose writers are completely without guile. But, unhappily, so many of us have become so inured to the slick reporting of news events that style rather than content becomes the basis for reader acceptance. Where the Soviet press resorts to the wholesale technique of "suggestio falsi", our press in the West utilizes the method of "suppressio veri" — the only difference being that the latter is much more subtle an approach and much more difficult to detect than the conscious lie. Why aren't the American and Canadian people told that the Russians showed a willingness to bargain on inspection while Mr. Baruch insisted that the West exert majority control through majority rule? Why was Mr. Baruch's threatened walkout never generally reported? Why didn't most people hear of Admiral Radford's offering of the A-Bomb to the French? And why didn't we hear of the French government's acceptance? Why is it that the Potsdam papers are still not published (although the presumed enemy was a party to the negotiations)? Why did Winston Churchill find it necessary to say to Stalin that "Personally I do not care about the Poles", while Stalin drinks a toast to the execution of 50,000 German prisoners of war proposed by Roosevelt? What supreme contempt for humanity is displayed by these leaders as they bargain across the counter for the murder of countless human beings and human destinies. Little wonder that our leaders wished to see the Yalta papers suppressed! In them is bound up all that is contemptible in man, the resort to cunning rather than honest bargaining. After reading excerpts from the Yalta papers I have the feeling that these leaders had one enemy in common — their own peoples, in fact the very dignity of ordinary men and women which they in their time had done so much to drive to hate and despair.

One is reminded of Nicholas Gogol's literary masterpiece "Dead Souls" in which the "hero" in order to inflate his prestige among his friends at court goes shopping around for the names and titles of dead serfs so that he can boast of having the largest number of serfs on his estate. And so he buys up titles for "Dead Souls". When I observe our diplomats at the conference table bargaining in secret my mind travels back to Gogol's "Dead Souls". With the atomic holocaust in the foreground they are engaged in the last macabre performance before they and the rest of us join Gogol's "Dead Souls".

You are more optimistic than I when you feel that the Russians and the U.S. will not blunder into a war. Both sides, I know, intend to keep the situation very much under control but both the Central Powers and the Triple Entente intended to play games while keeping things "under control" in 1914. Our series of crises today are very much like the ones that finally led up to the first great war in the twentieth century. The past performance of our statesmen and diplomats leaves me with little confidence in the future. Certainly there has been no suggestion from our leaders that they have any real conception as to what the thermonuclear age really means. They are still pursuing the same rivalries and are playing the same game of power politics even after we have passed the point of no return. We are on a frail raft plunging towards the abyss together and yet we still carry on our "Battles as Usual". O Voltaire if you were only here to see the last sad savage spectacle of human folly!

There is one chink of light that is still left — one tiny crack which we may yet exploit before oblivion. Just the other day I finished reading an article by Bertrand Russell on *Man's Duel With the Hydrogen Bomb.* In it he poses the problem of human survival in all its naked clarity:

> "I am writing not as a Briton, not as a European, not even as a member of a Western democracy, but as a human being, a member of the

> species Man, whose continued existence is in doubt. The world is full of conflicts: Jews and Arabs; Indians and Pakistanis; white men and negroes in Africa; and, overshadowing all these, the titanic struggle between Communism and anti-Communism.
>
> Almost everybody who is politically conscious has strong feeling about one or more of these issues, But I want you, if you can, to set aside such feeling for the moment and consider yourself only as a member of a biological species which has had a remarkable history and whose disappearance none of us can desire. I shall try to say no single word which would appeal to one group rather than another. All, equally, are in peril, and, if the peril is understood, there is hope that they may collectively avert it. We have to learn to think in a new way. We have to learn to ask ourselves not what steps can be taken to give military victory to whatever group we prefer, for there no longer are such steps. The question we have to ask ourselves is: What steps can be taken to prevent a military contest of which the issue must be disastrous to all sides?"

Nations, individual human beings — are no longer the enemy today. The enemy is the institution of war itself. A few of us have always recognized this fact. But we as liberals seem to be singularly ineffective when it comes to implementing our ideas. While we have the power to think we lack the power to act while those who have the power to act lack the power to think. This has always been the liberal's dilemma, but at no time has it been more urgent that we should at least try — even though it may already be too late.

That is why I think we should rally to Adlai Stevenson's challenge, although not necessarily to Adlai Stevenson, of "Eggheads of the world unite — you have nothing to lose but your brains!" We should then approach this problem of human survival with dead seriousness yet without taking ourselves, as intellectuals, too seriously. Hence my proposal for *United Action for World Survival* — a militant liberal lobby to be stationed in the capitals of the west.

UNITED ACTION FOR WORLD SURVIVAL: A Proposal for a Lobby for Liberals at the Formation Level of International Policy.

WHEREAS THE present international impasse threatens the very survival of the human race;

WHEREAS governments through the medium of bloc voting in the United Nations have consistently repudiated the principles of the U.N. Charter and flouted the Declaration of Human Rights;

WHEREAS such "grass roots" movements as the World Federalists, Union Now and the United Nations Associations have all shown serious tendencies to become sidetracked from the main issues, to become bogged down, and to degenerate into "social clubs";

WHEREAS the semi-official or so-called "scholarly" societies such as the Canadian Institute of International Affairs and the Council on Foreign Affairs have been enlisted in the Cold War and have consequently become the genteel sounding boards of government propaganda and furthermore have siphoned off intellectual energy from possible action into a flow of words so that the elite may rule undisturbed;

WHEREAS it is clear that nearly all great political reforms and institutional inventions have been initiated and promoted by tiny creative minorities often in the face of general apathy, e.g. the B.N.A. Act in Canada; the U.S. Federal Constitution;

BE IT THEREFORE RESOLVED THAT:

I World minded men and women unite to form an action group whose operations will be centered on Washington, Ottawa and New York where they will employ professional lobbyists who will use all their skill to

1. Further the promotion of the democratic process in international relations;
2. Bring closer the realization of the principles of the UN Charter and the Declaration of Human Rights;
3. Agitate for the establishment of Open Diplomacy and Genuine Negotiation instead of international Propaganda Conferences;
4. Urge specific proposals and draw up legislation that will reduce international tension and at the same time will not effect the relative postures of strength between the primary contending powers;
5. Establish more effective techniques of conference negotiation and a higher standard of international morality in regard to bargaining techniques;
6. Emphasize action through diplomacy rather than through the exclusive reliance upon military force;
7. Press for the adoption of the international secret ballot as a device which will make it more difficult and hazardous for the great powers to put the pressure on the smaller powers at the UN;
8. Assist, encourage and jointly plan with those persons whose official acts further all or any of the above goals;
9. Police and expose all the secrets of the secret disarmament talks, in which no one but the public is fooled, and exert a continuous pressure upon Governments to release documents in regard to disarmament by mercilessly exploiting every leak;
10. Systematically expose the diplomatic duplicity practised by Governments on both sides of the Iron Curtain;
11. Expose the specific points of origin of Government plotting and propaganda against its own citizenry;
12. Expose the motives and actions of individual representatives and officials who interfere with the achievement of a liberalized and open diplomacy and definitely assign individual responsibility;
13. Request the government weather bureaux to include in their daily reports a report of the background radiation count in different areas of the globe;
14. Produce regular reports to their supporting members indicating what persons are to be written to or where specific action may be taken on specific situations.

WE SPEAK NOT FOR GOVERNMENTS BUT FOR THE ENLIGHTENED CONSCIENCE OF AN AROUSED HUMANITY

You may wish to add to these points or delete others — but I would like your suggestions and comments. I have already sent the same set of proposals to the Unitarian Fellowship for Social Justice and to the American Humanist Association and I am momentarily awaiting their reply.

I think it is time that we as liberals should either put up or shut up. We all may die anyway but at least we'll die as liberals and not without protest.

Sincerely yours,
Bill Hall,
Toronto, Canada.

July 8, 1955.

Dear Bill,

Your proposal for "a militant liberal lobby" in Washington, Ottawa and New York represents an earnest attempt to grapple with and solve the central problem of modern history: How is man to control the artificial environment he has created for himself and which now threatens to destroy him? Or posed more concretely as the social problem: How is the mass of the population to exert decisive control over the summits of political power? Insofar as it is an attempt that places no reliance on the "good intentions" of the ruling authorities, it is to the good, differentiating itself sharply from the mainstream of what today passes for "liberal" politics. Nevertheless, it falls short of the mark essentially because it remains inside the framework of that insidious form of politics it is dedicated to overcoming.

It is not, let us be clear, a question of haggling over how likely it is that a "miscalucation" will suddenly precipitate the ultimate catastrophe. This in spite of the fact that your analogy with 1914 is not completely apt. World War I, in sharp distinction from No. 2, began as an historical accident that could have been postponed even if not ultimately avoided, but the world has come a long way since then. In 1914, events broke over the heads of the participants, catching them with scant awareness. International power was dispersed, smaller powers acted with relative freedom, and the outcome of the conflict remained to be determined in actual practice. Today power is concentrated to an unprecedented extent, most of yesterday's "great powers" have become small powers, and the small powers have been all but gobbled up. Those that remain are kept in rein by powerful economic, political and military strings. And the final result of the conflict is a foregone conclusion: The United States must emerge the winner (if over a desolate, poisoned planet), the outcome guaranteed by its overwhelming economic and technological advantage. There could be no better indication of the gap separating today from yesterday than to compare Sarajevo with Korea. In the first case, an incident over which the principal belligerents had no control precipitated them into headlong conflict; in the second, each side chose the battlefield, defined its limits and the mode of struggle and then proceeded to play at war for nigh on to the length of time it took to fight out the entire first World War.

Yet this distinction is not central to the discussion, for the sad fact is that your lobby of professional liberals would be no more successful in hindering the outbreak of atomic war, accidental or otherwise, than it would be in bringing a halt to the dreadful series of nuclear tests. If this sounds like a harsh verdict, let me attempt to fill it with substance.

Your proposal is lacking on two counts: (1) It fails to address itself to the heart of the matter, and (2) the means by which it hopes to achieve even its highly doubtful aim are not only completely inadequate but dangerous, into the bargain.

What you propose, essentially, is to *institutionalize* the fight against war — or, more correctly, the fight against those who are responsible for war. The distinction is not an idle one, for the refusal to recognize it lies at the root of an incalculable amount of confusion, not the least of which involves the transfer of responsibility from its proper shoulders to those of a disembodied myth popularized in the cartoonist's conception of the god Mars. For it is men, organized in certain social patterns, who make war; aside from social groups and their struggles, war has no existence. Neither is it an institution, in the sense that capitalism and religion, to mention two examples, are institutions. Capitalism, in its two centuries of world dominance, has spewed forth a vast skein of political, economic and social structures, glued together by an ideology, to support a specific interest. A more limited institution is organized religion, with its hierarchy and dogma, in the most extreme cases, but institutionalized, even in its Protestant form, with church bodies and an official, commonly-denominated ideology that reaches into every corner of social life. As opposed to these, war, no more than politics, is in itself an institution; it is an expression of conflicting interests. There arise, to be sure, social strata that live off war and the threat of war, becoming in themselves institutions which acquire increasing weight as production for destruction becomes ever more the dominant mode of existence. War itself, however, is a means, not a system. No matter how glorified, it has no independent existence, represents no specific interest. To oppose "war" in general is thus an easy virtue, all the more easily discarded when it comes down to cases. Immediately called to mind are the pacifists who deserted in droves (barring certain honorable exceptions) to take up arms, physically and ideologically, in World War II despite mountains of anti-war pledges. The "enemy" is far more concrete than war itself; it is those social forces who are responsible for war and in whose interests it is conducted. Opposition to war that does not, more or less clearly, focus itself on those whose instruments war is succeeds only in surrounding the entire problem with a dense fog.

A case in point is precisely Bertrand Russell, who equates everything and everybody and proposes to end the threat of mutual destruction with all the condescension of a schoolmaster breaking up a schoolboy fight. It is impossible to regard man in his primeval simplicity as an undifferentiated mass with a common biological interest. Thousands of years of history have resulted in a stratification in which only a discarding of outmoded social forms, today for the first time possible, can lead to a state of affairs in which mankind's common biological interest can assert itself. This can come about only by erasing distinctions, not ignoring them. Russell's indiscriminate appeal to a mutual interest in survival, so apparently compelling, is of the same value as instructing the wolf who is about to consume the neighborhood's last sheep that he is exhausting his food supply. The wolf can only reply to Mr. Russell that he has no choice. The economic overlords and their figures of state face the danger, to be sure, of finally cooking in the very pot they are preparing, but this consideration, no matter how apparently compelling, is one that must give way every time to the specific interests which drive them to a policy which, willy-nilly, can lead only to catastrophe. Consciousness of the peril is not lacking, even among the foremost ideological protagonists of atomic war. Admitting the imminence of immolation, they shout in growing numbers, "better to go down forever than be conquered". This heroism, which might be admirable did it not conscript all of humanity for the final sacrifice, is the system's answer to Russell's appeal "to the species man". Unfortunately, as matters now stand, the opinion of the rest of the species does not count.

It is even more difficult to be patient with Russell when he proceeds to equate the Negro's struggle against white oppression in Africa, to Eisenhower's "titanic struggle" against "communism". At last report, the Kikuyu had not taken to manufacturing H-bombs; the Zulus have yet to build their first atomic reactor. How an atomic holocaust is to be averted "collectively" or otherwise in Israel, India or Africa is a conundrum which Russell will perhaps one day explain. Where the crying need of intelligent political orientation is precisely political analysis and differentiation, determining in each struggle where, if at all, the common interest lies, Russell steps in with his huge brush and covers everything with the dull gray of the "profound" thinker.

The only sources capable of loosing the H-bomb within the foreseeable future are the governments of the United States, England and Russia. Not even France, despite the nagging of De Gaulle, has a perspective of joining this distinguished company. It is therefore either the most scrambled kind of thinking or something worse to propose a general moratorium on all struggles, including those of millions of oppressed peoples, in the name of the "common peril". Indeed, it is precisely to the extent that these imperialisms are weakened through the successful struggles of conquered peoples that the danger of nuclear warfare will diminish. Russia deprived of its East European satellites, Britain of its African empire, the United States of its vast skein of overseas bases, would find their warmaking abilities shrivelled and face internal crisis. The angry outcry of millions of recently liberated Asians was instrumental in forcing Eisenhower, Strauss and entourage to abandon plans for further nuclear tests in the Pacific during the spring of this year. A world docile before the United States and Russia, however, would be the staging ground for ultimate atomic conflict, upon which the antagonism between the two powers, now blunted by their common interest in preventing either a revolutionary development or a united Europe, would be free to unfold. Russell's profundity that "all are in peril, and if the peril is understood, there is hope that they may collectively avert it", becomes, upon analysis, the emptiest of aphorisms, for the peril is, in reality, fully "understood" precisely by those in positions of power; they strive to avert it in their own manner, one consistent with their special interests, which is the only path they are capable of discerning. Neither Eisenhower nor the Kremlin overlords are lacking in dread of an eventual atomic holocaust; their aim is to operate with the threat of the bomb rather than the weapon itself. But should this fail, as in the end it must, each stands ready, like Hitler before them, to take the world down, if they can, rather than surrender their positions; their ideologists have already vowed as much. More important, for the present, they stand ready to continue polluting the earth with radioactive ash, endangering the health of millions and the genetic heritage of future generations in the interests of imperialist politics and warmaking preparations. Each has made a conscious decision to risk "the peril" as an inevitable corollary of the course upon which they are, willy-nilly, embarked. Only a strike delivered from outside the framework of the traditional international game has any chance of altering mankind's course towards a final Götterdämmerung.

Such a strike can only be delivered by a public aroused to the danger posed by continued nuclear tests and the threat of an atomic war and mobilized in concerted (although not necessarily "organized") opposition. To give expression to this opposition, to encourage it, unify it, sharpen it, is the responsibility of those whose awareness of the peril is greatest. However, it is hardly advisable to substitute the lone dissenter for this popular opposition, whether by means of a "militant liberal lobby" or otherwise. As yet, public opinion in the United States, England and Canada, while deeply disturbed over the bomb, has not reached the point of conscious opposition, as it has, for example, in Japan. There can be, it goes without saying, no question of remaining silent in the meanwhile, but the course of action must be carefully chosen lest the entire nascent development become sidetracked. From this viewpoint, let me discuss your proposal for a "liberal lobby in the capitals of the West".

Lobbies, as a general rule, have a poor reputation — and for very good cause. They are indissolubly associated with behind-the-scenes legislative manœuvring for partisan advantage — both incompatible with a broad, democratic movement, which must operate always in the open and without particularistic considerations. The skilful lobbyist remains invisible to the general public, lest his identity arouse popular suspicions as to the measures for which he is plumping; only those lobbies working vainly in a lost cause (e.g., the China lobby) shed their invisibility and launch upon public scolding in ire at their defeat. Their pronouncements are generally treated with indifference if not contempt as soon as their source becomes known. Lobbyists must operate through pressure on individual legislators, an avenue that is hopeless for a movement aiming at such a keystone of American policy as the H-bomb gambit. Only the massive weight of public opinion, at home and abroad, can alter this course. Short of such an aroused citizenry, all the lobbyists in Washington, Ottawa and New York combined would not be able to influence events; once such a movement makes itself heard, the employment of so much as a single "professional lobbyist" will be superfluous.

You are quite correct in stating that "all great political reforms and institutional inventions have been initiated and promoted by tiny creative minorities". But you are overlooking an important corollary: They have not been achieved until they won the support of important layers of the population. Your proposal for a lobby is essentially an effort to shortcut this necessary process. It is particularly unfortunate that you choose to delegate this vital political struggle to "professionals", who by definition can be nothing else but individuals in the custom of selling their services to whatever cause will pay. While this may be conducive to a high degree of lobbying "skill", it is unlikely to produce anything but confirmed cynics with contempt for the very causes they serve. To enlist such careerists in a movement requiring the highest degree of devotion, sincerity and honesty would be unpardonable and could only discredit the entire case. Today, after a half-century of betrayals by bureaucratically constituted "labor", "socialist" and "progressive" organizations, a requisite for the success of any forward-looking grouping is that there be "nothing in it" for those who found and lead it. A corps of "professional lobbyists" would succeed only in justifying the most widespread cynicism.

The program you offer for this lobby does little to allay these fears. It can lead only to confusion and misunderstanding, when a clear comprehension of what is taking place in the realm of international power politics is essential. This seems to be a harsh judgement, but it is presented, I am sure you will understand, without rancor in the interests of clarifying the nature of the problem which we are both attempting to solve. Let me examine your proposals in detail to show exactly what I mean.

You want your lobbyists to "further the promotion of the democratic process in international relations". I find it difficult to determine precisely what meaning this can have. In the first place, rather more than three-quarters of the world's population lives under conditions ranging from the blackest dictatorship to the most fictitious of even formal democracy. The best the remainder can boast is an institutionalized "democracy" under which the populace's real opinion can be registered in only the most distorted way. Under these conditions I do not understand how "the democratic process" can be promoted "in international relations". Governments which are not representative of their people cannot act "democratically" in relation to each other, no matter what rules and regulations are established in such an international showcase as the United Nations. I put the word "democratically" in quotation marks because the word itself, in the context in which you present it, is highly problematical. Democracy is a form of internal political organization; the word has no meaning in relations between governments. Do not think that the existence of democracy at home is a guarantee of benignity abroad. The Athenian democracy, which stood higher than ours despite its accompanying slavery, nevertheless engaged in "undemocratic" (i.e., draconic) measures against other conquered Greek cities. In many cases, in fact, the "luxury" of democracy at home has been maintained only by a policy of conquest and exploitation abroad. The two policies have more frequently been complementary than contradictory. The only way in which the element of democracy can enter into a nation's foreign policy is in a manner purely negative: When it ceases all interference in the affairs of foreign peoples and leaves them to solve their own destinies.

The only place in which your opening plank takes on any flesh is in your seventh point, where you call for adoption of "the international secret ballot" to prevent the big powers from exerting pressure on the smaller ones, and it is just here that the fallacy of attempting to transfer concepts outside their proper boundaries shows up most clearly. Aside from the doubtful benefit of any proposal designed to make the United Nations, with its pomp, fraud and deceit, a repository of hope for a solution to world problems, it is lacking on its own ground for one simple reason: It would permit the governments to add one more secret to the mountain of actions *concealed from their own people*. This consideration far outweighs any dubious advantage the small nations might gain from voting out of sight of the major powers, since for the most part, the latter's bind over their satellites is far stronger than the threat of military or economic reprisal should they go astray. The analogy with the secret ballot in political elections is thoroughly false. There, the individual's vote is no one's concern but his own; he is responsible to no one for it. Your suggestion, on the other hand, would simply provide another playground for secret diplomacy at a time when the crying need is for an end to all closed-door manœuvring.

Your second point, to "bring closer the realization of the principles of the UN Charter and the Declaration of Human Rights" seems unexceptionable at first glance, but often it is necessary to take a second. It is as misleading as if someone were to propose as a rallying-cry to inspire an anti-governmental struggle in Russia the slogan, "Bring closer the realisation of the principles of the Soviet Constitution". (This was, incidentally, a document that aroused hardly less enthusiasm among the young in heart when it was issued than did the UN Charter and the Declaration of Human Rights. Thousand of self-styled "socialists" and "liberals" hailed it as signifying the end of Stalinist oppression and the gateway to a classless society. It is amazing the faith that can be deposited in the mere written word.) The UN Charter, like the Russian Constitution, was not only signed but formulated by men who are cheerfully violating its "principles" every day of the year. Involved is not just a failure to measure up to the mark but a conscious deception by the ideologists of governments that never had the slightest intention of regarding the declaration and the charter as anything but ornamental scrolls. The few attempts to implement these token documents have been brusquely rebuffed as constituting "internal interference" in the affairs of other nations.

A common fallacy pervades your next four points: You hope that the leopard, with a bit of encouragement, can be depended on to scrub off its spots. Reduced to its essentials, you propose, through pressure "at the summit", to reform international diplomacy to serve human ends. It would be difficult to imagine a vainer hope, because diplomatic duplicity is not merely a "bad method" of conducting international affairs but a necessary means of achieving disreputable ends. Would the Yalta agreements have withstood the light of day? "Open covenants openly arrived at" has been a shibboleth ever since Woodrow Wilson, but there are more secret agreements being entered into today than there were forty years ago. Do not misunderstand me; your insistence on exposing and terminating secret agreements is not in itself badly taken, but it would be well to appreciate what is involved in realizing them. Nothing short of a radical overturn in the affected countries is likely to suffice.

Less to the point is your companion plank for "genuine negotiation". There has been in truth no lack of "genuine negotiations" when those concerned have been desirous of reaching agreement (viz., Korea, Indo-China). On such other subjects as German unification they have (informally to be sure) agreed to disagree. Not that there are no fields of definite disagreement and rivalry in which each side strives for advantage, but it is here precisely that "genuine negotiations" are insufficient. For example, all signs indicate that the Russian economy is suffering severely under the strain of attempting to match America's pace in the development of nuclear weapons. This may lead the Stalinists to make elaborate gestures in an effort to obtain at least partial atomic disarmament, but it is precisely because America's superiority in this field is so overwhelming that only the most compelling considerations could compel it to accede to any kind of serious check on its weapons-development program. Thus, the slogan for "a ban on atomic weapons" has become a Stalinist catch-phrase, with which the Kremlin can continue its own H-bomb tests with moral impeccability since "agreement" on a nuclear-weapons moratorium has not been reached. Honest men like yourself, who rely upon international agreement to outlaw the H-bomb cannot but find themselves trapped behind this Stalinist slogan, which permits both sides to palm off responsibility for polluting the atmosphere with radiation on to the other. The simple demand for an end to nuclear tests *unilaterally* (minus even the weasel words, "if necessary") places the responsibility where it belongs and proves as embarrassing to the Stalinists as to Eisenhower.

A question: How will you "draw up legislation" and "urge specific proposals" to "reduce international tension" without affecting "the relative postures of strength between the primary contending powers"? The "relative postures of strength" are a dynamic, not a static factor. No proposals, no legislation can arrest the underlying developments that affect the powers' relative strength, the movements of subjugated peoples, the evolution of economic forces, political developments that hinge on international relations and in turn react upon them. Any international proposal, whether it be for a ban on atomic weapons or the unification of Germany, cannot but alter the powers' "relative postures of strength". Second question: Why should we, who are carrying water for freedom and democracy and not the *status quo,* strive to maintain the present "postures of strength", which are based in large measure on the oppression of millions of people on both sides of the Iron Curtain? There must be a more inspiring goal than this!

I confess myself entirely nonplussed by your fifth point. What sort of "effective techniques of conference negotiation" do you propose to teach Dulles and Molotov? How will you establish "a higher standard of international morality in regard to bargaining techniques?" You do not seriously think, do you, that the world's troubles can be traced to Molotov's boorishness or Dulles's lack of polish? Is it faulty technique at the conference table that is responsible for the failure to stop manufacturing atomic bombs? Would a series of lectures by Dale Carnegie bring disarmament appreciably closer? You will reply that I am vulgarizing your ideas, and I plead guilty in advance, but when you get right down to it, dear Bill, what concretely can you propose that makes a better face? As for morality, it, too, is a function of policy rather than a matter of faulty means. As well propose a moral code for the conduct of atomic warfare itself. How would you go about improving bargaining morality when each side comes to the conference table with bargaining positions whose wellsprings it desires to conceal not only from the other but, even more importantly, from the general population? In international bargaining, indeed, the morality fits the man.

To reinforce your perspective of reforming international finagling, you misstate the case rather manifestly when you imply that the powers designated out of sheer politeness as "The Big Four" rely upon the "exclusive" use of military force rather than diplomacy. You propose to "emphasize" diplomacy at a time when, heaven preserve us, it is being overemphasized to the point of nausea, with an unending round of state visits, international conferences in which the participants announce beforehand that they have little hope of accomplishing anything and it is considered a victory of diplomacy when agreement is reached to . . . continue discussing. Military force, properly understood, is not an alternative to diplomacy but an extension of it. When, except under commitment to total war, has there been "exclusive reliance upon military force"? Not even during Korea and Indo-China. In these two cases, the line was shaded finely indeed between the two means. Military force is used to accomplish what diplomacy cannot; diplomacy then ratifies the balance struck by the limited use of arms.

So much for the shortcomings of your proposal, upon which, as is always the case, the spotlight falls. Please do not conclude, because of this glare, that your stand is considered without merit. Unexceptionable, for example, are your plans for laying bare the secrets of disarmament and diplomatic duplicity in general, for fastening responsibility publicly where it belongs and for insisting on regular reporting of the background radiation count (although it seems somewhat out of place). In toto, weak points and all, your proposal is more of a companion to the liberalism of fifty years ago than to the cringing, apologetic politicking that passes under the name today. It is all the more to your credit that you advance your program in the knowledge that it will finish hopes for a diplomatic career; such courage is found all to seldom in public life these days. Liberalism today has acquired all the courage of a beaten cur; it follows close at the heels of official policy, either yelping its approval or, in rare cases, baying in dismay but following loyally. Your mistakes (you will excuse the pontifical tone) are just . . . mistakes, from which it is possible to learn. You take your stand as a true and not a "loyal" opposition, and that, in this day of pledges, can only be welcomed. For our part, you will find us ready to join in any concrete step you take to make that opposition effective.

Sincerely,

PAUL ECKER.

ERRATA

Vol. 6, No. 21, p.286: line 27 should read,

She greets Apoll' in freedom and my word I pledge:

Vol 7, No. 25, p.2: The fourth quotation should read,

> "We shall try to say no single word which should appeal to one group rather than to another. All, equally, are in peril and, if the peril is understood, there is hope that they may collectively avert it."

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